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Draft Environmental Impact Statement

Sugarloaf Hazardous Fuels Reduction Project

Feather River Ranger District, Plumas National Forest

USDA Forest Service, Plumas National Forest, Feather River Ranger District,
Plumas and Sierra Counties, California

Sugarloaf Hazardous Fuels Reduction Project

Draft Environmental Impact Statement

Plumas and Sierra Counties, California

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Abstract: The USDA Forest Service, Feather River Ranger District of the Plumas National Forest (PNF) has prepared the Sugarloaf Hazardous Fuels Reduction Draft Environmental Impact Statement (DEIS) to disclose the analysis of the no action alternative (alternative A), the proposed action (preferred alternative D) and two other land management alternatives (B and C), as a step toward achieving desired ecologically healthy forests and watersheds better able to adjust and thrive in the face of climate change and large scale disturbances such as fire, drought and insect and disease attacks, while increasing benefits citizens will receive such as improved delivery of clean water, wood and jobs to contribute to the economic stability of rural communities. Alternative D (the preferred proposed action) fulfills land management direction as described in the 2004 Sierra Nevada Forest Plan Amendment Final Supplemental EIS (SFNPA FSEIS) and Record of Decision (ROD). This Alternative best responds to the significant issue for contributing to cumulative watershed effects in the Rabbit Creek drainage and around Secret Diggings by incorporating stringent limitations on the size of created forest openings, retaining high 50-60 percent canopy closure near streams and upgrading drainage features on National Forest System (NFS) classified roads, decommissioning 0.7 miles of classified road and obliterating 9.8 miles non-classified roads aimed at improving localized water quality. Surrounding the communities of LaPorte and American House and private property, proposed treatments are strategically positioned to fill in gaps between defensible fuel profile zones (DFPZs); planned prior to September 30, 2012 under the Herger-Feinstein Quincy Library Group Forest Recovery Act (HFQLG Act). Outside defense zones (>1/4 mile out from communities), public advice supported by best science from General Technical Reports: Pacific Southwest (PSW) Research Station; PSW–GTR-220 and PSW-GTR-237 (March 2009 and 2012 respectively) underlies placement of aquatic and upslope reserves and ecological fuels and vegetation prescriptions; beneficial to promoting fire resilient, properly functioning watershed conditions. Alternative D includes 859 acres of variable density thinning and 76 acres of area thinning from below expected to produce 4.6 million board feet of commercially-valuable timber, requiring 3.6 miles of NFS classified road reconstruction, 2 miles of unclassified road construction (closed post operations) and the construction of 24 new landing sites; 278 acres of mastication; 1,401 acres of

hand thin, pile, and burn; 71 acres of hand thin, grapple pile, and burn; 3,598 acres of prescribed fire including 331 acres of prescribed underburning in the Valley Creek Special Interest Area (SIA). Alternative A proposes no action (status quo) providing a baseline against which the action land management alternatives can be compared. Alternative B is designed to test vegetative, fuels reduction and riparian restoration Herger-Feinstein Quincy Library Group Forest Recovery Act (HFQLG Act) Pilot Project activities, recognizing this alternative can only be selected if a project-specific amendment to the 2004 Sierra Nevada Forest Plan Amendment Final Supplemental EIS (SFNPA FSEIS) and Record of Decision (ROD) is authorized. Alternative B addresses cumulative watershed effects by incorporating similar roads improvements, riparian restoration treatments and mitigations as alternative D. Under Alternative B, gaps in the existing defensible fuel profile zone (DFPZ) network would be linked and Group Selections (GSs) up to 2.0 acres in size, considered highly flammable in the short term, would be positioned away from LaPorte and American House. Alternative B proposes 992 acres of DFPZ thinning with 763 acres of variable density thinning and 229 acres of thinning from below; 71 acres of group selection (GS); 223 acres of mastication; 683 acres of hand thin, pile, and burn; 3,919 acres of prescribed fire using manual ignition (i.e., drip torch) techniques, and 20.3 miles of NFS roads would be improved, decommissioned or obliterated. Wood by-products from these treatments are expected to produce 5.8 million board feet of commercially-valuable timber volume, requiring 4.9 miles of NFS classified road reconstruction, 4.3 miles of unclassified (temporary) road construction (closed post operations) and the construction of 31 new log landing sites. Alternative C (non-commercial funding alternative) is required for all projects proposing hazardous fuels reduction. This alternative excludes all activities other than fuels reduction and does not respond to the forest or watershed health elements of the purpose and need. Alternative C proposes to establish 1,315 acres of area fuel treatments using thinning from below; 334 acres of mastication, 1,542 acres of hand thin, pile, and burn; 91 acres of hand thin, grapple pile, and burn; 3,643 acres of prescribed fire including 331 acres within the federally-administered Valley Creek Special Interest Area (SIA). Wood by-products from these treatments are expected to produce 5.3 million board feet of commercially-valuable timber volume, requiring 3.5 miles of NFS classified road reconstruction, 2.8 miles of unclassified road construction (closed post operations) and the construction of 21 new landing sites.

The Sugarloaf Hazardous Fuels Reduction Draft Environmental Impact Statement (DEIS) is available on the Plumas National Forest website: http://fs.usda.gov/plumas. Reviewers should provide the Forest Service with their comments during the 45-day comment period for the Sugarloaf Hazardous Fuels Reduction Draft Environmental Impact Statement (DEIS). It is important that reviewers provide their comments at such times and in such a way that they are useful to the Agency's preparation of the EIS. Therefore, comments should be provided prior to the close of the comment period and should clearly articulate the reviewer's concerns and contentions. The submission of timely and specific written comments can affect a reviewer's ability to participate in subsequent administrative review or judicial review. Comments received in response to this solicitation, including names and addresses of those who comment, will become part of the public record for this proposed action. Comments submitted anonymously will be accepted and considered; however, anonymous comments will not provide the respondent with standing to participate in subsequent administrative review or judicial review.

The opportunity to comment ends 45 days following publication of the notice of availability (NOA) in the Federal Register. Comments on the Sugarloaf Hazardous Fuels Reduction Draft

Environmental Impact Statement (DEIS) should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3). Send Comments to: Karen L. Hayden, Feather River District Ranger, c/o Feather River Ranger District of the Plumas NF, Sugarloaf Hazardous Fuels Reduction Project, 875 Mitchell Avenue, Oroville, CA 95965. Comments may be hand delivered Monday through Friday, 8:00 am to 4:30 pm, excluding holidays. Comments may also be faxed to (530) 532-1210 or emailed to comments-pacificsouthwest-plumas-featherrvr@fs.fed.us. The acceptable format(s) for electronic comments is: rich text format (.rtf), plain text (.txt), adobe (pdf.), or Word (.doc).

Summary

Ecological Restoration is at the core of the U.S. Forest Service mission to sustain the health, diversity and productivity of the Nation's forests to serve the needs of present and future generations. The call for ecological restoration is widely recognized due to the myriad of threats to our watershed including catastrophic wildfire, climate change, and increasing human population pressures with cumulative impacts.

The Feather River Ranger District of the Plumas National Forest (PNF) is proposing the Sugarloaf Hazardous Fuels Reduction Project (Sugarloaf Project) to take a step toward restoring localized water quality, fire behaviors and ecologically healthy forests better able to adjust and thrive in the face of climate change, wildfire, drought and insect and disease attacks, while increasing benefits citizens will receive such as jobs, improved delivery of clean water and wood to contribute to the economic stability of rural communities.

In order to meet the elements of the purpose and need of this project and respond to the significant issue of cumulative watershed effects, the following treatments are proposed: strategically-placed vegetative and fuels reduction treatments (mechanical variable density thinning and area thinning from below), manual (hand cutting); prescribed fire techniques including prescribed underburning in the Valley Creek Special Interest Area (SIA) and road improvements around the communities of the LaPorte and American House.

The Sugarloaf Project is located south of Little Grass Valley Reservoir, from Goat Mountain in the north to community of American House in the south, surrounding the community of LaPorte on National Forest System (NFS) land. The project encompasses all or portions of T. 21 N., R. 8 E., sec. 24-26; T. 21 N., R. 9 E., sec. 2, 3, 5-10, 14-22, 27-32, MDM. The treatment areas proposed on NFS lands range in elevation from 4,000 to 5,800 feet above mean sea level.

The Feather River Ranger District of the Plumas National Forest (PNF) has designed the proposed action to incrementally move existing degraded watershed and forest ecosystems vulnerable to wildfire toward desired ecologically healthy conditions, resilient with proper hydrologic function. Residents living in LaPorte, American House and surrounding areas rely on the Forest Service for effective wildfire suppression and active management of public lands for clean water, biodiversity beneficial amenities and uses supporting recreation, tourism, quality of life, home heating (firewood), jobs and wood products, to name a few.

Since the early 1900s, large scale hydraulic mining on private lands, logging and road building have caused localized increases to in-stream sedimentation levels. There is a need to obliterate, decommission and repair improperly constructed and unmaintained roads increasing sediment levels in streams down-slope. Fire exclusion has decreased the incidence of historic low intensity fires, allowing for a build-up of surface and canopy fuels and lower tree vigor. There is a need for excessive fuel accumulations (fuel loading) to be reduced to decrease risks to people, structures, and natural resources from wildfire.

There is a need for tree densities and tree species diversity to be altered to address declining tree vigor and loss of pine and oak species, which were historically abundant. There is a need for contributing to local forestry-related employment and provide forest products offerings, while retaining aesthetically pleasing landscape features, biodiversity and clean water supporting tourism related income vital for rural communities such as LaPorte.

The desired condition is a fire-resilient landscape featuring uneven-aged, multi-storied, forestlands abundant with thick-bark, tall ponderosa, sugar pine, oak and dispersed large Douglas-fir and incense cedar. Healthy tree crowns (the uppermost part of the tree) are sufficiently spaced to limit the spread of rapid crown fire during periods of high temperature, low humidity, high wind, and low fuel moisture conditions, particularly on the upper slopes and along mountain ridges. The ecological vegetative and fuels conditions are resilient to climate change forecasts of increasing number of days above mean average conditions and longer fire seasons.

The desired condition within the Valley Creek Special Interest Area (SIA), spatially overlapping California spotted owl protection activity centers (CSO PACs) and surrounding home range core areas (HRCAs), is large trees with sufficient canopy cover to allow for nesting, filtered light conditions on the forest floor, a diversity of understory plants, adequate soil moisture and duff levels.

The desired condition for watershed health is a resilient, hydrologic proper functioning sediment regime featuring a well-designed, low density transportation system supporting free flowing cold, clean waterways, healthy and diverse aquatic habitats and species.

The desired condition for community stability is local economies are served by beneficial uses, biodiversity, available timber and biomass supplies promoting family wage jobs.

The Sugarloaf Project was scoped with the publication of the Notice of Intent in the *Federal Register* on Tuesday, June 5, 2012 (Vol. 77, No.108, pp. 33158-33159), disclosing alternative B as the preferred proposed action, designed to fulfill mandates per the *Herger-Feinstein Quincy Library Group Forest Recovery Act* (HFQLG Act). On September 30, 2012, the *2008 Consolidated Appropriations Act* authorities to implement the HFQLG Act ended.

For this reason, the Sugarloaf Project DEIS identifies alternative D as the preferred proposed action emphasizing watershed and ecological restoration in compliance with the 2004 Sierra Nevada Forest Plan Amendment Final Supplemental EIS (SFNPA FSEIS) and Record of Decision (ROD).

On March 27, 2013, a final rule revising 36 CFR Part 218 became effective. Section 428 of the *Consolidated Appropriations Act*, 2012 directs the agency to establish a pre-decisional objection process for projects and activities documented with a Record of Decision in lieu of the post-decisional appeal process used since 1993. The rule requires publication of legal notices to the Web. The legal notice for the Sugarloaf Project is available for review on the Plumas National Forest website: http://fs.usda.gov/plumas.

On June 27, 2012, during the initial 45-day scoping period, the Director of the John Muir Project of Earth Island Institute accompanied Forest Service specialists on a field site visit to the Sugarloaf project area. The Pacific Crest Trail Association, Northern Sierra Regional Representative requested information and submitted comments on July 3, 2012. On July 20, 2012, a scoping letter was received

from the Lead Reviewer (R5) Environmental Protection Agency (EPA). A public meeting was held on June 18, 2012; attended by three representatives from Sierra Pacific Industries, Quincy Library Group (QLG) Counties' Forester and several residents of LaPorte. A compilation of comments received during the scoping period is located in the project record at Feather River Ranger District in Oroville, CA.

The proposed action is designed to meet the standards and guidelines for land management activities described in the Plumas National Forest Land and Resource Management Plan (PNF LRMP) (USDA 1988) as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) FSEIS and ROD (USDA 2004a, 2004b). The Forest Service has identified cumulative effects to watershed resources a significant issue, leading the agency to develop alternative D, while reducing risks to life and property from wildfire and providing for other resource improvements and beneficial outcomes.

Table S-1 includes a summary of the proposed action and the three other alternatives considered in detail for the Sugarloaf Hazardous Fuels Reduction DEIS, discussed further in chapter 2.

Table S-1. Description of alternatives considered in detail.

Alternative Description
Alternative A: No-action Alternative. The No-action Alternative provides a baseline against which to compare the other action alternatives. This Alternative does allow for on-going administrative activities within the Project Area, such as reforestation, road maintenance, roadside danger tree felling, fire suppression, and dispersed recreation. Under the No-action Alternative, current land management direction would continue to guide activities on National Forest System land (NFSL).
Alternative B. Alternative B is designed implement *Herger-Feinstein Quincy Library Group Forest Recovery Act* (HFQLG Act) Pilot Project activities, recognizing this alternative can only be authorized *if* a project-specific amendment to the 2004 Sierra Nevada Forest Plan Amendment Final Supplemental EIS (SFNPA FSEIS) and Record of Decision (ROD) is authorized. This Alternative incorporates road improvements, decomissioning and obliteration similar to alternative D, while establishing defensible fuel profile zones (DFPZs) and Group Selection (GS) treatments under standards and guidelines in the 2004 ROD; Table 2. *Alternative B proposes*: 992 acres of DFPZ thinning with 763 acres of variable density thinning and 229 acres of thinning from below; 71 acres of group selection (GS); 223 acres of mastication; 683 acres of hand thin, pile, and burn; 3,919 acres of prescribed fire using manual ignition (i.e., drip torch) techniques 20.3 miles of NFS road would be improved, decomissioned or obliterated to promote watershed health. Wood by-products from these treatments are expected to produce 5.8 million board feet of commercially-valuable timber volume, requiring 4.9 miles of NFS classified road reconstruction, 4.3 miles of unclassified (temporary) road construction (closed post operations) and the construction of 31 new log landing sites.

Alternative Description
Alternative C: (Non-commercial funding). Alternative C (non-commercial funding alternative) is required for all projects including hazardous fuels reduction; designed in compliance with the Plumas National Forest Land and Resource Management Plan (PNF LRMP) (USDA 1988) as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) FSEIS and ROD (USDA 2004a, 2004b). This alternative excludes all activities other than fuels reduction in the wildland urban interface (WUI) and does not respond to the forest or watershed health elements of the purpose and need. *Alternative C proposes*: 1,315 acres of area fuel treatments by thinning from below; 334 acres of mastication; 1,542 acres of hand thin, pile, and burn; 91 acres of hand thin, grapple pile, and burn; 3,643 acres of prescribed fire, including 331 acres within the federally-administered Valley Creek Special Interest Area (SIA). Wood by-products from these treatments are expected to produce 5.3 million board feet of commercially-valuable timber volume, requiring 3.5 miles of NFS classified road reconstruction, 2.8 miles of unclassified road construction (closed post operations) and the construction of 21 new landing sites.
Preferred Alternative D: Proposed Action. Alternative D is designed to fulfill land management direction as described in the Plumas National Forest Land and Resource Management Plan (PNF LRMP) (USDA 1988) as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) FSEIS and ROD (USDA 2004a, 2004b) and responds to the signficant issue for potential cumulative watershed effects. Alternative D proposes road improvements, decomissioning and obliteration, along with integrated ecological fuels and vegetation treatments; beneficial to promoting watershed health. *Alternative D proposes*: 859 acres of variable density thinning and 76 acres of thinning from below; 278 acres of mastication; 1,401 acres of hand thin, pile, and burn; 71 acres of hand thin, grapple pile, and burn; 3,598 acres of prescribed fire, including 331 acres within the federally-administered Valley Creek Special Interest Area (SIA); 16.9 miles of NFS road would be improved, decommissioned or obliterated. Wood by-products from these treatments are expected to produce 4.6 million board feet of commercially-valuable timber, requiring 3.6 miles of NFS classified road reconstruction, 2 miles of unclassified road construction (closed post operations) and the construction of 24 new landing sites.

The Forest Supervisor of the Plumas National Forest, Earl W. Ford, is the Responsible Official for land administered by the USDA Forest Service. This DEIS is not a decision document. Its main purpose is to publicly disclose the environmental analysis conducted, as well as the Proposed Action and the alternatives' potential consequences on the human environment; providing an important context for subsequent federal decision-making. Accordingly, the Sugarloaf Hazardous Fuels Reduction DEIS focuses on providing analysis sufficient to facilitate the following federal decisions:

- Should hazardous fuels reduction, ecological vegetative and watershed health land management treatments be authorized at this time?
- If it is decided action is warranted now, to what extent and under what conditions should the Forest Service authorize activities?
- What mitigation and monitoring measures should be required, if an action alternative is selected?

Major conclusions include:

- Alternative A
  - Flame length is predicted between 1–100 feet predicted fire types are surface, passive and active if not treated (100 percent); 92 percent of the NFS lands analyzed are classified as Condition class 3, in which vegetation composition, structure, and fuels have a high departure from the natural fire regime and predispose the system to high risk of loss of key ecosystem components. The steep Slate Creek and Rabbit Creek drainages align with southwest prevailing wind direction, which would tend to funnel the flame front towards the town of LaPorte and homeowner communities immediately to the north;
  - One hundred percent stands retain all trees greater than 24 inches DBH and minimum average 50 percent canopy cover;
  - One hundred percent of 4M, 4D and 5M retained;
  - No effect to Federal listing or loss of viability for the following Forest Service Sensitive species: California spotted owl, Northern Goshawk, American Marten, Pacific fisher, Townsend big-eared bat, Pallid bat; Sierra Mountain yellow-legged frogs, Pacific pond turtles and Foothill yellow-legged frog;
  - One subwatershed would continue to be over the threshold of concern (TOC) and five subwatersheds may continue to approach the TOC (recovery is uncertain as the potential for natural and human caused disturbances is likely);
  - No potential to effect effective soil cover because mechanical thin, group selections, mastication and prescribed burning would not occur;

- No effect to Forest Service Sensitive plant species known within the project area: *Peltigera hydrothyria* (a lichen), *Botrychium crenulatum, Cypripedium fasciculatum, Lewisia kelloggii* ssp. *hutchisonii*, *Lupinus dalesiae*, and *Phaeocollybia olivacea* (a fungus);

- No sawlog volume or biomass would be generated;

- No direct or indirect effects to heritage resources, as no project related activities would occur to impact known sites;

- No additional emissions, as there would be no mechanical equipment use or prescribed burning.

- No improvement to watershed health, as road generated soil erosion would continue to promote sedimentation and impacts to aquatic habitats.

- Alternative B

  - Flame length is predicted between 1-4 feet and the predicted fire behavior is surface fire in treated areas (87 percent); DFPZs and Groups Selections (GSs) interior DFPZs would provide connectivity between the existing fuel treatments of Bald Onion, South fork DFPZs Poverty Hill and LaPorte HFR projects;

  - Forty three percent stands retain all trees greater than 24 inches DBH and nineteen percent stands retain greater than 50 percent canopy cover;

  - Predicted 30 percent 4M and 21 percent of 5M net, with 51 percent 4D removed;

  - May affect individuals, but are not likely to result in a trend toward Federal listing or loss of viability for the following Forest Service Sensitive species: California spotted owl and Northern Goshawk, American Marten, Townsend big-eared bat, and Pallid bat;

  - May affect individuals, but is not likely to contribute to the need for Federal listing or result in loss of viability for the Pacific fisher;

  - May impact individuals of Pacific pond turtles and Foothill yellow-legged frog but is not likely to cause a trend toward Federal listing or a loss of viability;

  - No effect to Sierra Mountain yellow-legged frogs;

  - Three subwatersheds would be pushed over their thresholds of concern (TOC) and one subwatershed would continue pushing further into percent of TOC;

  - Greater potential to effect effective soil cover associated with DFPZ mechanical thin and group selections treatments;

- No effect to Forest Service Sensitive plant (lichen) species *Peltigera hydrothyria* as no project related activities will impact known occurrences of this rare species;
- May impact individuals but not likely to cause a trend toward federal listing or loss of viability for the following Forest Service Sensitive plant species: *Botrychium crenulatum*, *Cypripedium fasciculatum*, *Lewisia kelloggii* ssp. *hutchisonii*, *Lupinus dalesiae*, and *Phaeocollybia olivacea* (a fungus);
- Predicted levels of sawlog volume is are 5.8 mmbf;
- No direct or indirect effects to heritage resources, as no project related activities would occur to impact known sites;
- Predicts the least emission because there is more mechanical thinning reducing the amount of material to be burned;
- Beneficial to watershed health improvements, as up to 4.9 miles of road reconstruction (NFS roads PC511A, 22N53, 21N18A, and 21N42Y), 4.9 miles of temporary road reconstruction, and 10.5 miles of road decommissioning would occur to lower sedimentation and impacts to aquatic habitats.

- Alternative C
  - Flame length is predicted between 1-4 feet and the predicted fire type is surface fire in treated areas (72 percent); at the landscape level, fuel treatments would provide connectivity between the existing fuel treatments of Bald Onion, South fork DFPZs Poverty Hill and LaPorte HFR projects;
  - Seventy seven percent stands retaining all trees greater than 24 inches DBH and forty percent stands retain greater than 50 percent canopy cover;
  - Predicted 58 percent 4M net, with 49 percent 4D removed;
  - Same determinations for wildlife terrestrial species as listed in Alternative B;
  - Same determinations for aquatic wildlife species listed in Alternative B;
  - Same determinations for Forest Service Sensitive plant species as listed in alternative B;
  - One subwatershed would continue approaching its TOC, Three subwatersheds would be pushed over their TOC, and one subwatershed would continue pushing further into percent of TOC;
  - Predicted levels of sawlog volume is 5.3 mmbf;
  - No direct or indirect effects to heritage resources, as no project related activities would occur to impact known sites;

- No improvement to watershed health, as road generated soil erosion would continue to promote sedimentation and impacts to aquatic habitats.

- Alternative D

  - Flame length is predicted between 1-4 feet and the predicted fire type is surface fire in treated areas (89 percent); at the landscape level, fuel treatments would provide connectivity between the existing fuel treatments of Bald Onion, South fork DFPZs Poverty Hill and LaPorte HFR projects;

  - Eighty seven percent of stands retain all trees greater than 24 inches DBH and forty two percent stands retain greater than 50 percent canopy cover;

  - Predicted 42 percent 4M and 3 percent 5M net, with 35 percent 4D removed;

  - Same determinations for wildlife terrestrial and aquatic species as listed in alternative B;

  - Same determinations for Forest Service Sensitive plant species as listed in alternative B;

  - Three subwatersheds would be pushed over their thresholds of concern (TOC) and one subwatershed pushing further into percent of TOC, similar to alternative B;

  - Predicted levels of sawlog volume is 4.6 mmbf;

  - No direct or indirect effects to heritage resources, as no project related activities would occur to impact known sites;

  - Beneficial to watershed health improvements, as up to 3.6 miles of road reconstruction reconstruction (NFS roads PC511A, 22N53, 21N18A, and 21N42Y), 2.8 miles of temporary road reconstruction, and 10.5 miles of road decommissioning would occur to lower sedimentation and impacts to aquatic habitats.

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Chapter 1. Purpose and Need for Action

1.1 Document Structure

The Forest Service has prepared this Draft Environmental Impact Statement (DEIS) in compliance with the *National Environmental Policy Act* (NEPA) and other relevant Federal and State laws and regulations. This Draft Environmental Impact Statement discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four chapters, and includes appendices and an index.

1.2 Changes between the Draft and Final Environmental Impact Statements

- **Chapter 1. Purpose and Need for Action**

  This chapter briefly describes the proposed action, the need for that action, and other purposes to be achieved by the proposal. This section also details how the Forest Service informed the public of the proposed action and how the public responded.

- **Chapter 2. Alternatives, including the Proposed Action**

  This chapter provides a detailed description of the agency's proposed action as well as alternative actions that were developed in response to comments raised by the public during scoping. The end of the chapter includes a summary table comparing the proposed action and alternatives with respect to their environmental impacts.

- **Chapter 3. Affected Environment and Environmental Consequences**

  This chapter describes the environmental impacts of the proposed action and alternatives.

- **Chapter 4. Consultation and Coordination**

  This chapter provides a list of preparers and agencies consulted during the development of the environmental impact statement.

- **Appendix**

  The appendix provides more detailed information to support the analyses presented in the environmental impact statement.

- **Index**

  The index provides page numbers by document topic.

Additional documentation, including more detailed analyses of resource specific impacts, may be found in the project record located at the Feather River Ranger District office, 875 Mitchell Avenue, Oroville, CA 95965.

1.3 Introduction

This chapter discusses each element of the purpose and need, the project's geographical location, desired conditions and unique measurement indicators used in the analysis for this DEIS. The description of applicable laws, policies, and direction is provided to clarify the analysis framework. This chapter also discloses actions taken by the Forest Service to inform the public about the proposed action and other alternatives and how the public responded. At the end of this chapter, a presentation of the issues that influenced the development of the alternatives and analyses methods is provided. The information summarized in the following sections are based upon field data and analyses as described in detail in the DEIS; chapter 3: "Affected Environment and Environmental Consequences," the DEIS appendix A and associated resource reports and assessments.

1.4 Purpose and Need for Action

The purpose and need explains why an agency action is necessary and is the basis for identifying reasonable alternatives. Agencies draft a Purpose and Need statement to describe what they intend to achieve with the action they are proposing. The following subsections present the four elements of the Purpose and Need for this federally proposed action.

1.4.1 Purpose 1: Reduce Hazardous Fuels

Objective. Reduce wildfire hazards to natural resources on National Forest System (NFS) lands and the at-risk communities of LaPorte and American House to achieve desired fire behavior.

Need for Action. There is a need for reducing hazardous fuel accumulations within the Sugarloaf Project area. There are 1,289 communities currently on the Communities at Risk List managed by the California Fire Alliance, including the community of LaPorte, featuring and surrounded by excessive amounts of highly flammable fuels on National Forest System (NFS) lands. Although American House is not currently on the California Fire Alliance list of Communities at Risk, it is classified as at-risk in the Plumas County Community Wildfire Protection Plan (CWPP).

Since the early 1900s, private and government land development, along with wildfire suppression practices over the past 90 years, has altered natural fire regimes leading to overcrowded forest conditions and buildup of high flammable vegetative fuels. Based on the historic precedent, fire records indicate wildfire consumed down woody forest debris (i.e., surface fuels) and caused a high degree of small tree mortality in the forest understory (e.g., ladder fuels). Heavy timber litter has a high propensity for fire ignition and rapid spread, while the dense understory acts as a fuel ladder. The fuel loading or amount of combustible material associated with FM TU5 for dead and down woody material less than 3 inches in diameter (primary fire carrier) is 11 tons per acre.

Overstocked forest lands are mostly composed of Sierra mixed-conifer and white-fir forest types: a vertical and horizontal continuum of vegetative fuels capable of supporting large-scale, rapid moving fire. Average canopy base height less than 15 feet, with tree branches positioned low to the ground, tend to support wildfire behavior characterized by 4 foot or greater flame lengths along with torching of a single tree or small group of trees, from the ground up. Fires burning in similar

vegetation conditions, fire behavior predictions and expert local knowledge indicate these present conditions in the Sugarloaf Project Area are likely to result in high intensity fire behavior.

In the project area, a lightning prone landscape, where human-caused ignition is a contributing factor, wildfire is often difficult to suppress due to: (1) impassable roads and lengthy travel response time; (2) potential for high (greater than 4 feet) flame lengths; (3) steep terrain making anchor points difficult to establish; and, (4) rapid tree crown to tree crown fire spread (active crown fire).

1.4.2 Purpose 2: Promote Forest Health

Objective: Modify tree crown densities, tree species composition and forest structures to develop a mosaic of full-sun and interior filtered-light and restore ecologically healthy forestland conditions, resilient to climate change, insects and pathogens.

Need for Action. There is a need for establishing disturbance resilient late seral forestland conditions (i.e., California Wildlife Habitat Relationship [CWHR] size classes 4M/4D and 5M/5D), capable of supporting 50 to 70 percent healthy canopy cover in California spotted owl home range core areas (CSO HRCAs), as designated by the Sierra Nevada Forest Plan Amendment (SNFPA) FSEIS and ROD (USDA 2004a, 2004b).

Historic fire records indicate the last wildfire occurred approximately 100 years ago. Today, homogenous, overcrowded forestlands are in need of density management or maintenance prescribed fire to re-establish and sustain a diverse suite of tree and plant species, structural complexity (full-sun and filtered-light) and disturbance cycles; a first step toward restoring healthy forest conditions more characteristic of those that developed under the influence of active fire regimes.

Within the Valley Creek Special Interest Area (SIA) and spatially overlapping Protection Activity Center (PAC) and surrounding Home Range Core Areas (HRCAs), key habitats for wildlife such as the California spotted owl and Northern goshawk, there is a need for mimicking low-severity wildfire disturbance to preserve forest structure, composition, and function of late-successional old growth forests, recognized for their unique botanical and scenic values.

Desired Condition. The desired condition is an uneven-aged, multistoried, fire-resilient forest featuring decaying snags, large down wood; dominated by large fire-tolerant trees with crowns sufficiently spaced to limit the spread of crown fire and spread of insects and diseases. Stand densities would generally be moderate, characteristic of mid-elevation frequent, low to mixed intensity fire behavior. Mosaic canopy forest structure would promote the regeneration, growth and development of aesthetically-pleasing ponderosa pine, sugar pine and black oak, while promoting heterogeneity resilient to climate change.

The desired condition within the Valley Creek Special Interest Area (SIA), protection activity centers (PACs) and surrounding home range core areas (HRCAs) is fire-resilient old-forest featuring large trees with sufficient canopy cover to allow for nesting, filtered light conditions on the forest floor, a diversity of understory plants, adequate soil moisture and duff levels and low road densities

Measures of modifying forest structure and species composition include: Stand structure measured by trees per acre, basal area per acre, and relative stand density; composition measured by percent change in shade-intolerant species; and landscape heterogeneity measured by percent change in CWHR size and density classes.

1.4.3 Purpose 3: Improve Watershed Health

Objective. Promote localized water quality for wildlife and beneficial uses, while reducing risk of long lasting disturbances to sensitive watersheds from wildfire.

Need for Action. There is a need for redesigning and decommissioning NFS (classified) roads and obliterating non-classified legacy roads to provide localized reductions in road-generated sediment production. Roads tend to modify stream channel networks to accelerate erosion processes. These changes can dramatically degrade water quality and aquatic habitats by altering flow, sediment loading, sediment transport and deposition, channel morphology, channel stability, substrate composition, stream temperatures and riparian conditions. Common hydrologic problems originating at roads include rutting and road surface erosion; poorly placed or inadequate stream crossings and surface drains that may fail, diversion of streams from natural courses if the crossing structure plugs (commonly termed diversion potential), or blockage of passage for fish and other aquatic organisms; and over-steepened cut-and-fill slopes prone to erosion and mass wasting. The interdisciplinary team (IDT) process for identifying NFS road classified needs and roads with resource damage includes a roads analysis consistent with legal requirements (36 CFR 212 Subpart A—Administration of the Forest Transportation Classified, 16 U.S.C. 551, 23 U.S.C. 205).

There is a need to sustain adequate vegetative soil cover resilient to wildfire to prevent wide spread accelerated erosion and sediment delivery events, typically caused by deforestation post large scale, high intensity wildfires. Years of fire suppression has altered the natural fire regime resulting in excessive buildup of fuels likely to promote high intensity fire behavior, threatening already impacted hydrologic resources in the Rabbit Creek drainage around LaPorte and Secret Diggings.

Desired Condition. The desired condition for watershed health is slope and stream channel stability provided by healthy forests resilient to wildfire with a well-designed, low density transportation system supporting proper hydrologic function and sediment regimes, free flowing waterways and healthy aquatic and riparian plants and animal habitats. Roads that are needed are maintained and improved to accommodate vehicle traffic without causing resource damage. Roads that are causing a high level of resource damage are obliterated, decommissioned or reconstructed in accordance with the 1988 Forest Plan, as amended, and Plumas National Forest Public Motorized Travel Management Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) (September 2010).

Measures of improving watershed health: Miles of road obliterated, decommissioned and reconstructed that affect the densities of roads in watersheds; risk to watershed resources from wildfire.

1.4.4 Purpose 4: Contribute to Economic Stability

Objective. Afford a broad spectrum of marketable goods and job opportunities, and through the provision of enhancing aesthetic resource amenities for visitors, contribute to the economic stability of rural communities.

Need for Action. There is a need to provide employment opportunities for rural communities dependent upon forest products for jobs and revenue. Timber production from national forests peaked from the 1960s through the 1980s, and plummeted in the last several decades. Because the Forest Service dominates timberland ownership in Plumas County, California, and privately owned timber cannot fill the gap created by the decline of harvesting on NFS lands, there has been a sharp decline in forestry-related economic activity and employment.

The Plumas National Forest (the Forest) contributes to the regional economy in two primary ways: (1) through the generation of income and employment opportunities for residents of the immediate area, and (2) through direct and indirect contributions to local county revenues. The Forest also contributes in secondary ways, such as through fee revenues and production of goods and services in local and regional markets. Although some economic effects are dispersed over a broad area, the most substantial impacts are felt locally in Butte, Plumas, Lassen, Sierra, and Yuba Counties. Recent mills closures and loss of jobs within the sphere of economic influence to the project area, coupled with the waning housing market and rising cost of living, has cumulatively resulted in the loss of indirect and induced jobs (1.6 – 2.25 according to IMPLAN documentation in the Framework EIS).

The community of LaPorte and American House are within reasonable log haul distance of the project area, highly dependent on recreation opportunities in the forest areas for economic vitality. These opportunities are seasonal in nature, but occur year-round and take advantage of the natural forest and lake settings, the presence of historic and cultural remnants, and unique scenery and national significance to the backcountry and scenic hiking constituency including equestrians.

LaPorte is a key stopping place for supplies, food and lodging. Camping, fishing, boating, hiking, mountain bike and OHV trails, scenic auto tours, hunting, snowmobiling, and cross country skiing trails are all amenities supporting $130,000–$160,000 in recreation fee revenue annually. Further contributions to the Plumas National Forest budget, town of LaPorte and Plumas County include the revenues and taxes paid by outfitter guides that have special use authorizations to operate fishing and hunting guide services at Little Grass Valley Reservoir to the north and in the general forest surrounding the lake and LaPorte. Ninety five percent of the fees collected contribute to managing and improving these facilities and contribute to Plumas County's tax revenue stream.

The forest road network provides the foundation for the Feather River Ranger District's winter snowmobile program. This program leverages $22,000 of State of California Off-Highway Vehicle (OHV) funding, District appropriated funds with generous volunteer labor hours and private equipment contributions.

Desired Condition. The desired condition for community stability is local economies are supported by environmentally sustainable use of NFS land natural resources, including outputs of sustained timber yield and biomass supplies, family wage jobs and tourism revenue.

Measures for contributing to economic stability. Revenue/costs measured in sawlog harvest volume (MMBF), sawlog and biomass harvest revenues, harvest costs, net harvest revenues, non-harvest costs and total project value and employment/income measured in potential direct and indirect jobs and potential employee income.

1.5 Proposed Action

The proposed action (preferred alternative D) fulfills land management direction as described in the 2004 Sierra Nevada Forest Plan Amendment (SFNPA) Final Supplemental EIS (FSEIS) and Record of Decision (ROD). This alternative best responds to the significant issue of cumulative watershed effects in the Rabbit Creek drainage and around Secret Diggings by limiting the size of created forest openings to 1/4 acre, retaining 50–60 percent canopy closure near streams, upgrading drainage features on NFS roads, decommissioning 0.7 miles of NFS classified road and obliterating 9.8 miles non-classified roads to reduce road-generated sediment sources to improve localized water quality.

Near the communities of LaPorte and American House and private property, proposed treatments are strategically positioned to establish defensible space linkages to fill in gaps between defensible fuel profile zones (DFPZs); planned prior to September 30, 2012 under the *Herger-Feinstein Quincy Library Group Forest Recovery Act* (HFQLG Act). Outside threat zones (1/4+ mile around communities), public advice supported by best science from General Technical Reports: Pacific Southwest (PSW) Research Station; PSW–GTR-220 and PSW-GTR-237 (March 2009 and 2012 respectively) underlie unique aquatic and upslope reserves and ecological fuels and vegetation prescriptions; beneficial to promoting fire resilient, proper functioning watershed conditions and quality habitats.

Alternative D includes 859 acres of cost-effective variable density thinning and 76 acres of area thinning from below expected to produce 4.6 million board feet of commercially-valuable timber, requiring 3.6 miles of NFS classified road reconstruction, 2 miles of unclassified road construction (closed post operations) and the construction of 24 new landing sites; 278 acres of mastication; 1,401 acres of hand thin, pile, and burn; 71 acres of hand thin, grapple pile, and burn; 3,598 acres of prescribed fire including 331 acres of prescribed underburning in the Valley Creek Special Interest Area (SIA).

Follow-up manual and prescribed burning fuels reduction treatments would generally be applied within 1 to 3 years after harvest operations are complete. This sequence facilitates safe operations and generates revenue to offset costs of manual and prescribed burning activities. The proposed action is described in more detail in chapter 2, preferred alternative D.

1.6 Decision Framework

The Responsible Official for this proposal is the Forest Supervisor for the Plumas National Forest (PNF). This DEIS is not a decision document; rather it serves to disclose the environmental consequences of no immediate land management (no-action), the proposed action and two other land management alternatives. Within the forthcoming ROD, given the purpose and need, the deciding

official will disclose his review of the proposed action, the other alternatives, and their predicted environmental consequences, along with the rationale and determination to either authorize the proposed action as described in the Final EIS (FEIS), select with modifications, select a different alternative or take no action at this time.

Alternatives C and D are consistent with management direction per in the Plumas National Forest Land and Resource Management Plan (PNF LRMP) (USDA 1988) as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) FSEIS and ROD (USDA 2004a, 2004b). Alternative B would require a minor amendment to the 2004 SNFPA FEIS and ROD.

1.7 Forest Plan Direction

1.7.1 Forest Plan

Direction for the Plumas National Forest is based on the 1988 Plumas National Forest Land and Resource Management Plan (commonly referred to as the "Forest Plan") and a major Forest Plan amendment.

In August 1988, the Regional Forester signed the Record of Decision for the Forest Plan. In January 2004, the Regional Forester signed the Sierra Nevada Forest Plan Amendment (SNFPA) final supplemental EIS Record of Decision, which replaced the 2001 SNFPA Record of Decision. The 2001 SNFPA final EIS and Record of Decision are incorporated by reference in the 2004 Record of Decision on the SNFPA final supplemental EIS. The following land allocations within the Sugarloaf project area apply:

Wildland Urban Interface **(297 acres).** The wildland urban intermix zone (WUI) is an area where human habitation is mixed with areas of flammable wildland vegetation. It extends out from the edge of developed private land into Federal, private, and State jurisdictions. The WUI is comprised of two zones: the defense zone and the threat zone.

The WUI defense zone is the buffer in closest proximity to communities, areas with higher densities of residences, commercial buildings, and/or administrative sites with facilities. Defense zones generally extend roughly 1/4 mile out from these areas; however, actual defense zone boundaries are determined at the project level following national, regional and forest policy. Defense zones should be of sufficient extent that fuel treatments within them will reduce wildland fire spread and intensity sufficiently for suppression forces to succeed in protecting human life and property.

Threat zone boundaries generally extend approximately 1¼ miles out from the defense zone boundary; however, actual extents of threat zones are based on fire history, local fuel conditions, weather, topography, existing and proposed fuel treatments, and natural barriers to fire. Fuels treatments in these zones are designed to reduce wildfire spread and intensity. Strategic landscape features, such as roads, changes in fuels types, and topography may be used in delineating the physical boundary of the threat zone.

Northern goshawk Protected Activity Centers **(PACs) (792 acres) and** ***California spotted owl PACs*** **(614 acres)** including direction to avoid California spotted owl protected activity centers (PACs) and northern goshawk PACs wherever possible. Strategically apply low intensity, understory

forest thinning and prescribed fire along the perimeter and within spotted owl PACs to protect spotted owl and goshawk PACs from wildfire; rotate treatments on a decadal cycle to maintain suitable, undisturbed interior habitats; treating no more than 10 percent at a time.

Mechanical treatments in PACs in the WUI threat zone is only allowed when necessary to ensure the overall effectiveness of the landscape fire and fuels strategy. This evaluation will take into account the condition of the PAC and its use by spotted owls and its expected resiliency to treatment. Where PACs cannot be avoided outside the WUI, prescribed fire is the only treatment option.

California spotted owl home range core areas (HRCAs) **(2,540 acres).** A home range core area is established surrounding each territorial spotted owl activity center detected after 1986. Management treatments are designed to manage large habitat blocks that have: (1) at least two tree canopy layers; (2) at least 24 inches dbh in dominant and co-dominant trees; (3) a number of very large (greater than 45 inches dbh) old trees; (4) at least 50 to 70 percent canopy cover; and (5) higher than average levels of snags and down woody material.

Visual Quality Objective; Foreground and Partial Retention **(2257 acres).** The landscape appears natural and management activities are not visually evident and remain visually subordinate.

Wild, Scenic and Recreation River **(587 acres).** The outstandingly remarkable values are protected and preserved for the benefit and enjoyment of present and future generations. Free-flowing conditions are preserved by stabilizing sources of erosion. Human influence may be evident, but does not interfere with or impede the natural succession of river ecosystems by designing projects in compliance with VQOs. Natural vegetative conditions are protected and preserved by reintroducing low intensity fire applied to establish mosaic diversity.

1.7.2 Region 5 (California) Guidance on Court Order for a Non-commercial Funding Alternative

The Memorandum and Order dated 11/04/2009, for Case 2:05-cv-00205-MCE-GGH, Sierra Forest Legacy, et al., Plaintiffs, versus Mark Rey in his official capacity as Under Secretary of the Agriculture, and People of the State of California vs. United States Department of Agriculture, provided an order from Morrison C. Englund, United States District Judge, directing the Forest Service to address the NEPA violation previously identified in both these cases. The Remedy section of this Memorandum and Order (in section C) states: tes: rra Forest Legacy, et al., Plaintiffs, versus Mark Rey in his official capacity as Under Secretary Service to include a detailed consideration of project alternatives, including a non-commercial funding alternative, for all new fuel reduction projects not already evaluated and approved as of the date of this Memorandum and Order.

1.8 Public Involvement

The Forest Service initiated scoping to inform the public about the purpose and need for the Sugarloaf Project to solicit different points of view on the pending action and issues to be addressed during the project analysis period and invite participation in the environmental analysis process. The Sugarloaf Hazardous Fuels Reduction Project was listed in the Plumas National Forest quarterly Schedule of Proposed Actions (SOPA) beginning in December 2012.

The Sugarloaf Project was initially scoped with the publication of the Notice of Intent in the *Federal Register* on Tuesday, June 5, 2012 (Vol. 77, No.108, pp. 33158-33159). On September 30, 2012, the *2008 Consolidated Appropriations Act* authorities to implement the HFQLG Act underlying the design of preferred alternative B ended. For this reason, the Sugarloaf Project DEIS presents alternative D as the preferred proposed action emphasizing watershed health and ecological restoration under the 2004 Sierra Nevada Forest Plan Amendment Final Supplemental EIS (SFNPA FSEIS) and Record of Decision (ROD).

On March 27, 2013, a final rule revising 36 CFR Part 218 became effective, establishing a pre-decisional objection process for projects and activities documented with a Record of Decision in lieu of the post-decisional appeal process used since 1993. The rule requires publication of legal notices to the Web. On May 25, 2013, the Sugarloaf Project legal notices were published on the Plumas National Forest website: http://fs.usda.gov/plumas.

In addition, the Forest Service mailed letters inviting comment on the Sugarloaf Project to 5 Tribal Councils, potentially affected mining claimants (near or within proposed treatment areas), other government agencies, interest groups and 443 potentially affected citizens. An additional 33 emails were sent with invitation to comment letter attached. A Scoping Packet providing information about the rationale and description of the proposed treatments by alternative was distributed and available on the PNF website. A revised Scoping Packet was distributed on April 14, 2013 to update interested stakeholders of project modifications and shift in notice and comment procedures.

On June 18, 2012, the Forest Service held an open house attended by three representatives from Sierra Pacific Industries, Quincy Library Group (QLG) Counties' Forester and several residents of LaPorte. Concerns for operational economic feasibility of treating biomass along with recommendations were provided. Residents expressed concerns for impacts to scenic quality and risks associated with applying prescribed fire.

On June 27, 2012, the Director of the John Muir Project of Earth Island Institute accompanied Forest Service specialists on a field site visit to the Sugarloaf project area providing recommendations and information regarding incorporating concepts from the General Technical Reports PSW–GTR-220 and PSW-GTR-237, prepared by the USDA Pacific Southwest Research Station (March 2009 and 2012 respectively) to mechanical thinning prescriptions and strategically allow for moderate and high intensity prescribed fire; specific recommendations to promote Black-backed woodpecker habitat was shared. The Pacific Crest Trail Association, Northern Sierra Regional Representative requested information and submitted comments on July 3, 2012 to protect and preserve the Pacific Crest National Scenic Trail and surrounding scenic quality as internationally significant resources.

On July 20, 2012, a scoping letter was received from the Lead Reviewer (R5) Environmental Protection Agency (EPA) expressing concerns regarding cumulative water quality impacts from road construction, increased habitat fragmentation and the potential for noxious weed proliferation linked to the HFQLG Act; specifically DFPZ and Group Selection treatments proposed in the HFQLG could be non-sustainable practices that will result in the future degradation of natural resources, available timber products and the overall economic welfare of the surrounding communities. EPA also provided recommendations for analysis and disclosure in the DEIS.

A compilation of comments received during the scoping period is located in the project record at Feather River Ranger District in Oroville, CA. The draft EIS (DEIS) will be sent to agencies, organizations, and individuals that submitted comments throughout the project planning process, individuals who requested a copy or additional information, and thirteen reviewing agencies (listed in chapter 4 of this DEIS).

1.9 Issues

The Feather River Interdisciplinary Team (IDT) reviewed the comments from the public, other government agencies, and tribes for cause-effect relationships linked to federally proposed individual or multiple land management activities. These relationships served to highlight potential or unintended physical, biological and social effects, used by the IDT to refine the proposed action's design features and mitigation measures and as the basis to explore alternative ways to meet the purpose and need and reduce newly identified predicted adverse effects. The IDT organized these cause-effect relationships into three major groups: significant, other relevant and non-significant issues.

Significant issues were defined by the IDT as those where there may be a cause-effect relationship between a proposed action and a significant effect linked to the extent of the geographic consequence, the duration of the effect, and the intensity of resource conflict, warranting the preparation of an EIS.

Cumulative Watershed Effects. Although watershed systems can tolerate certain levels of land disturbance; there is a point when cumulative events begin to have significantly effects. The Forest Service identified cumulative watershed effects as a significant issue in Rabbit Creek subwatersheds 5, 6, and 8 surrounding the community of LaPorte and subwatersheds 11 and 15 in the area of Secret Diggings, as federally-proposed activities such as logging, prescribed burning and landing construction may further increase sedimentation levels to degrade unacceptably and cumulatively hydrologic function, water quality, stream channels, riparian features and associated wildlife habitats, already impacted by historic large scale hydraulic mining and road building.

Hydraulic mining activities of the late 19th century, concentrated in the Rabbit Creek around LaPorte and in the area of Secret Diggings on private lands, stripped away large areas of hillside vegetation and topsoil and left affected slopes steeper than the natural angle of repose for the native soils. Many of these barren hill slopes have not yet stabilized or re-vegetated today and mine sites continue to produce point sources runoff; chronic major sources of sediment to nearby streams. Past and on-going road building have culminated in a sprawling transportation system network today around LaPorte, threatening the quality of local water resources.

Other relevant issues classified for this EIS analysis, differ from Significant Issues, in that they often describe minor and/or non-variable consequences typically partially or fully mitigated by project design features. Significant and other relevant issues are summarized in tabular format by alternative for easy comparison in DEIS; chapter 2. Chapter 3 of the DEIS further describes these issues in narrative format.

Non- significant issues were defined by the IDT as those: (1) outside the scope of the proposed action; (2) already decided by law, regulation, Forest Plan, or other higher level decision; (3) irrelevant to the decision to be made; (4) conjectural and not supported by scientific or factual evidence; or (5) the comment could not be phrased as a cause-effect relationship. Non-significant issues were identified as those not resulting in a significant effect. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review… (Sec. 1506.3)." For these reasons, non-significant issues are not discussed further in this DEIS. A list of non-significant issues and reasons why they were found non-significant may be found in the project record located at the Feather River Ranger District in Oroville, CA.

1.10 Permits

In accordance with 40 CFR 1502.25 (b), the Environmental Impact Statement is to list all Federal permits, licenses, or other entitlements that must be obtained in implementing the action alternatives. Sorting and removing Forest by-products from the site to commercial off-Forest vendors would involve some form of permits for road use, right-of-way, or use of private lands for landings and access. Prescribed burning will require a burn permit from the local Air Quality Management District (AQMD). No additional Federal, State or County permits, licenses, or other entitlements were identified as requirements for implementation of the proposed action or alternatives.

Chapter 2. Alternatives, Including the Proposed Action

2.1 Introduction

This chapter describes and compares the no action alternative, the proposed action and the two action alternatives considered in detail for the Sugarloaf Hazardous Fuels Reduction Project (Sugarloaf Project). The beginning of this chapter discusses specific treatment design methods and locations, followed by disclosure of key mitigation and monitoring legal frameworks. The end of this chapter presents a comparison of the alternatives in tabular format, further discussed in narrative format in chapter 3.

2.1.1 Alternatives Considered in Detail

The *National Environmental Policy Act* (NEPA) is our country's basic charter for environmental responsibility. The NEPA applies when a federal agency has discretion to choose amongst one or more alternative means of accomplishing a particular goal (Council on Environmental Quality [CEQ] NEPA Regulations, 40 CFR § 1508.23). This DEIS discloses potential environmental effects associated with the Responsible Officials' proposed action (preferred alternative D), alternative A (no-action), and action alternative B and alternative C.

In compliance with the NEPA, the no action alternative A is included and analyzed as a baseline against which the action alternatives B, C, and D can be compared. Alternatives C and D are designed per the Plumas National Forest Land and Resource Management Plan (PNF LRMP) (USDA 1988) as amended by the Sierra Nevada Forest Plan Amendment Final Supplemental EIS (SFNPA FSEIS) and Record of Decision (ROD) (USDA 2004a, 2004b). This Decision includes direction for testing *Herger-Feinstein Quincy Library Group Forest Recovery Act* (HFQLG FRA) Pilot Project vegetative, fuels reduction and riparian restoration activities, proposed under alternative B.

Management direction for carrying out this Decision includes standards and guidelines for project design and implementation, introduced in chapter 1. Some standards and guidelines apply to alternatives C and D only (see 2004 SNFPA ROD: appendix B), others are unique to alternative B and the proposed HFQLG FRA Pilot Project activities (see 2004 SNFPA ROD: Table 2), while several apply to all action alternatives (see 2004 SNFPA ROD: Appendix D). The alternative spatial arrangements and range of phased treatments developed by the interdisciplinary team (IDT) are designed within the sideboards of these standards and guidelines, aimed at achieving desired conditions, management intents and minimizing potential for contributing to significant cumulative watershed effects.

The Sugarloaf Project was scoped with the publication of the Notice of Intent in the *Federal Register* on Tuesday, June 5, 2012 (Vol. 77, No.108, pp. 33158-33159), disclosing alternative B as the preferred proposed action alternative. On September 30, 2012, the *2008 Consolidated Appropriations Act* authorities to implement the *Herger-Feinstein Quincy Library Group Forest Recovery Act* (HFQLG Act) ended.

For this reason, the Sugarloaf Project DEIS identifies alternative D as the preferred proposed action alternative emphasizing watershed and ecological restoration in compliance with the 2004 Sierra Nevada Forest Plan Amendment (SFNPA) Final Supplemental EIS (FSEIS) and Record of Decision (ROD).

2.1.2 Alternative Development

The following section discloses the rationale underlying the development of alternatives analyzed in detail to achieve management intents and respond to the significant issue for cumulative watershed effects. It includes a discussion of design elements to optimize the benefits of mechanical, manual, prescribed fire, road drainage, road decommissioning and obliteration activities. This section begins with a disclosure of opportunities and constraints common to all action alternatives gleaned from landscape assessments, followed by discussion about the alternative treatment prescriptions, ending with disclosure of treatment specific standard operating procedures (table 2-3).

2.1.2.1 Watershed Health

Protection of water quality and quantity is an important part of the Forest Service's mission, along with controlling point and non-point source pollution, such as road-generated erosion leading to in-stream sedimentation. Although watershed systems can tolerate certain levels of land disturbance; there is a point when cumulative events begin to significantly impact water quality and dependent resources including aquatic habitats. In Rabbit Creek subwatersheds 5, 6, and 8 surrounding the community of LaPorte and subwatersheds 11 and 15 in the area of Secret Diggings (see figure 2-1), historic large scale hydraulic mining and high density road building (6.32–9.59 mi/mi^2) contributing to significant cumulative watershed effects (CWE) are far-reaching.

As landscape scale restoration necessary to reverse cumulative watershed effects is constrained by multiple land ownerships and jurisdictions, regulatory and financial resources, the interdisciplinary team (IDT) targeted correcting road-generated point source erosion near streams and rare aquatic habitats, and establishing fire-resilient forest conditions to lower the likelihood of disturbances disrupting hydrologic recovery over the long term. All action alternatives incorporate Best Management Practices (BMPs) and similar streamside treatments, designed to promote quality aquatic and riparian habitats while preventing or diminishing further adverse effects to water quality.

Best available science indicates typically only a small proportion of road segments within a large forest road network generate most of the road-related increases in sediment yields (MacDonald 2007). Field observations and monitoring data indicate road sediment deliveries can be greatly decreased by improving road drainage to disconnect the pathways leading between road templates and stream systems.

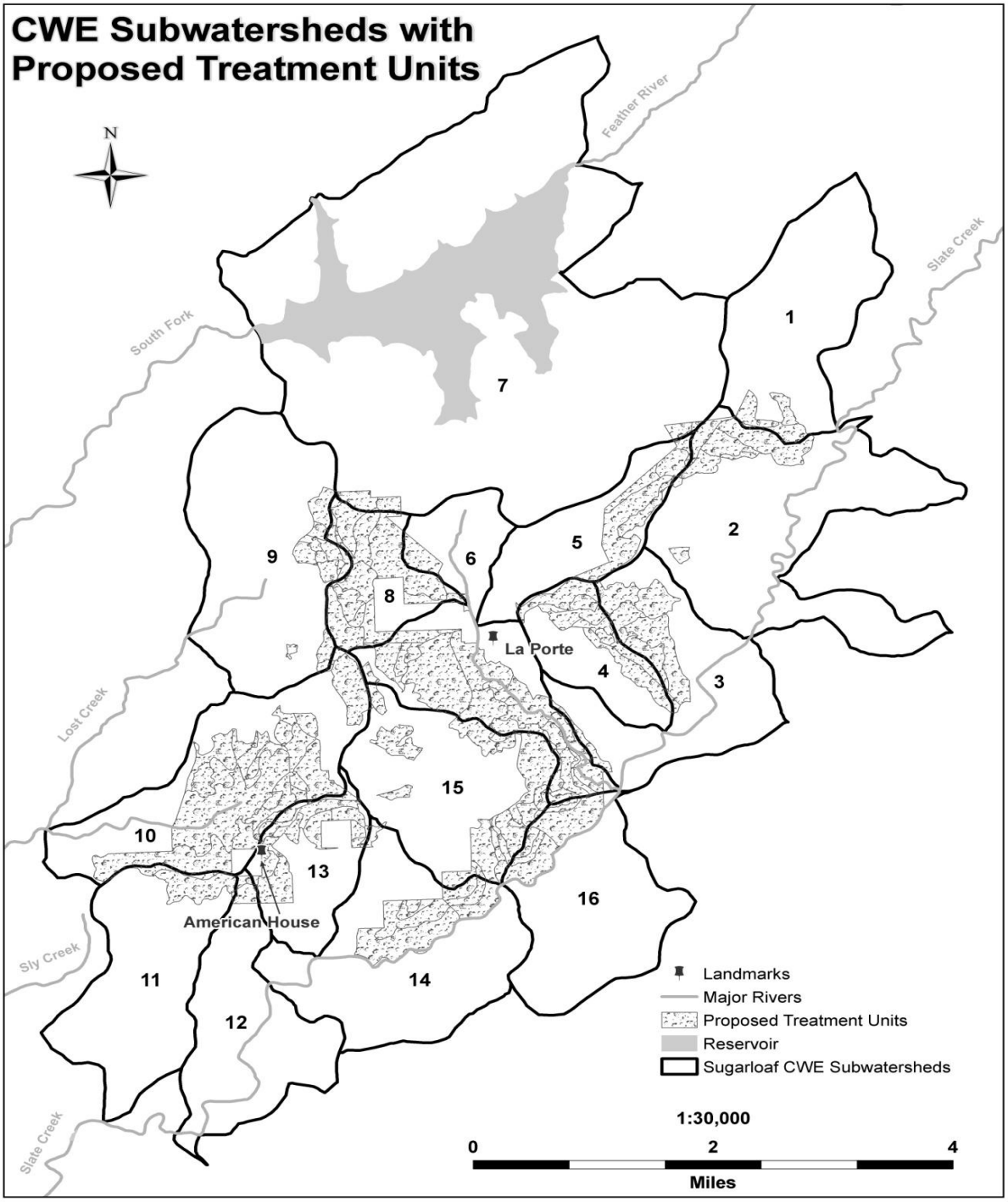
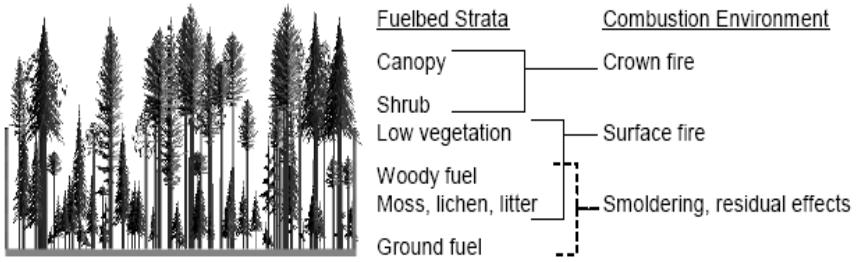


Figure 2-1. Subwatersheds 5, 6, and 8 surrounding the community of LaPorte and subwatersheds 11 and 15 are most at-risk to significant cumulative watershed effects (CWE).

For this reason, all action alternatives incorporate the following standards for temporary road construction, road reconstruction and road relocation: (1) design new stream crossings and replacement stream crossings for at least the 100-year flood, including bedload and debris; (2) design stream crossings to minimize the diversion of streamflow out of the channel and down the road in the event of a crossing failure; (3) design stream crossings to minimize disruption of natural hydrologic flow paths, including minimizing diversion of streamflow and interception of surface and subsurface water; (4) avoid wetlands or minimize effects to natural flow patterns in wetlands; and (5) avoid road construction in meadows. Both alternatives B and D incorporate beneficial watershed road drainage improvements, decommissioning of National Forest System (NFS) classified road and obliteration of legacy non-classified routes near streams in vulnerable subwatersheds.

2.1.3 Hazardous Fuels



All action alternatives would apply the most intensive fuels reduction treatments on south-facing slopes in the wildland urban interface (WUI) roughly 1/4 mile out from LaPorte and American House, focused on reducing risks to life and property from wildfire. All fuels reduction activities are positioned to fill in gaps in defensible fuel profile zones (DFPZs) established under the HFQLG Act, link to defensible space projects on private lands and follow along paved roads to leverage fire suppression effectiveness (see figure 2-2 below).

The tree canopy is the primary stratum involved in independent crown fires. The spatial continuity and density of tree canopies, combined with fuel moisture and wind, influence the rate of fire spread and severity. The IDT proposes mechanical tree removal using a range of prescriptions to modify this fuelbed stratum. As the primary management intent is to affect fire behavior and support effective fire suppression, proposed fuel reduction treatments emphasize alteration of forest vegetative structure in all three fuelbed strata.

Historic fire records and local weather trend data indicates prevailing wind direction tends to travel from the south and southwest to the north and northeast in alignment with the orientation of drainages such as Slate Creek, Spanish Ravine and Rabbit Creek. As the communities of LaPorte and American House are topographically positioned at the upper headwaters of these drainages, fire would likely funnel upslope with these communities directly in the path of the flame front.

The IDT devised a sequenced fuels reduction strategy common to all action alternatives targeting ground fuels, ladder fuels (shrubs and low vegetation) and canopy fuels (tree crowns) as displayed below, which influence fire behavior. Woody ground fuels such as sound logs, rotten logs, stumps, and wood piles from either natural causes or management activities would be treated using prescribed fire. Wood can greatly increase energy release from surface fires and can in some cases increase flame lengths sufficiently to ignite ladder fuels and canopy fuels. Moss, lichens, and litter on the forest floor can also increase energy release in surface fuels.

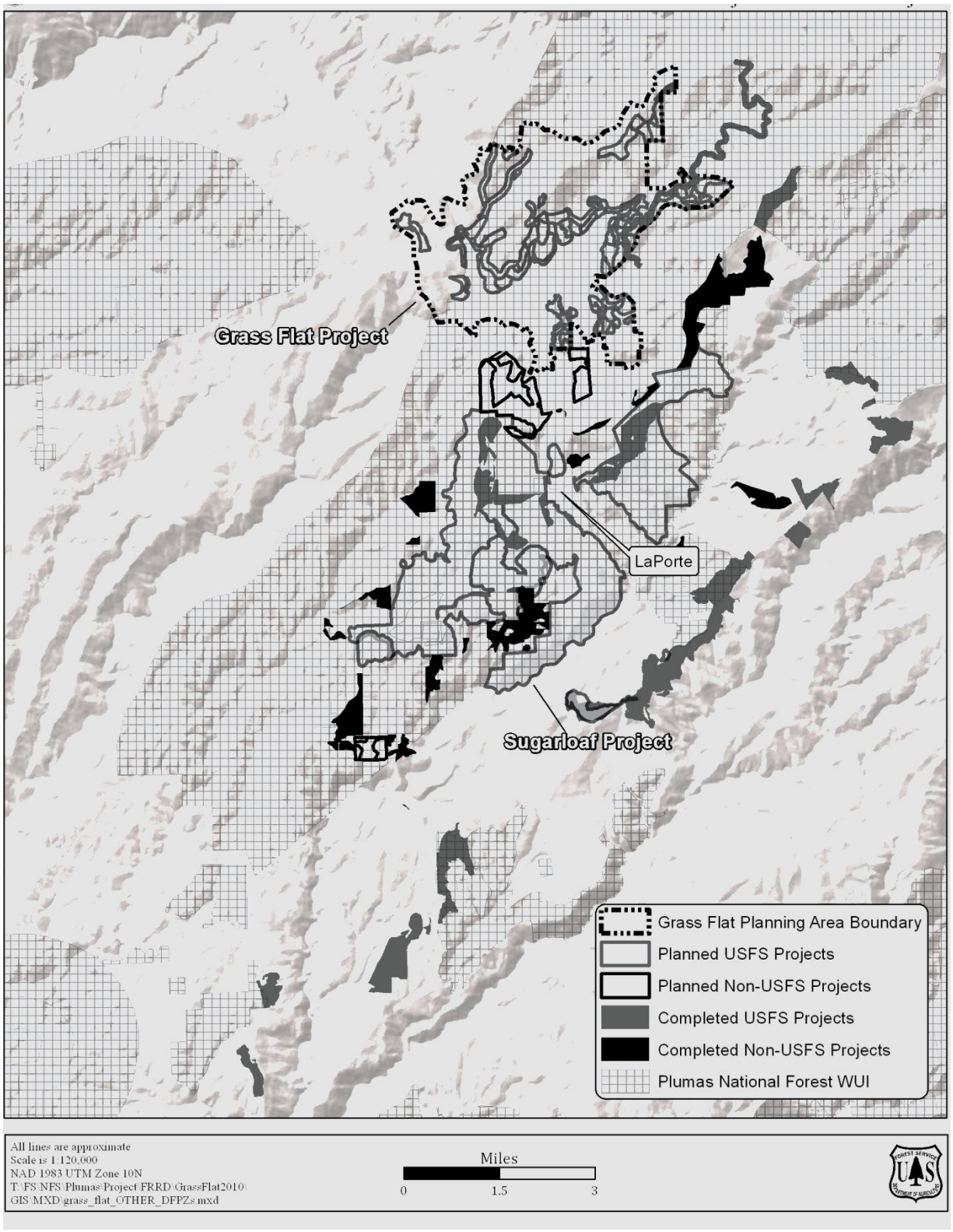


Figure 2-2. Illustration of the larger defensible space network in the wildland (WUI) defense and extended threat zones.

Ladder fuels such as low vegetation consisting of grasses, herbs shrubs and seedlings can carry surface fires when that vegetation is dead or has low moisture content. The IDT proposes a range of hand cutting, grapple piling, pile burning, and mastication to break up fuel continuity.

Outside the WUI defense zones, historical fire spread and intensity, historical weather patterns, topography and location of sensitive watersheds and rare habitats influence treatment intensity and locations. The following design criteria are common to all action alternatives:

- Modify the amount, structure and pattern of vegetative fuel conditions to interrupt fire spread across the landscape, with treatment prescriptions designed to modify fire behavior within the treated area;
- Masticate trees less than 9.9 inches depth at breast height (dbh), including hardwoods on slopes less than 45 percent slope;
- Within 1/4 mile of private properties on south facing slopes, lower forest canopy cover to 40 percent;
- Near streams, selectively hand cut, pile and burn and apply understory burning, whereby fire is ignited upslope so that only low intensity flames creep downhill in a mosaic pattern.

Beginning in 1982, the USDA Forest Service advanced the fire danger rating system comprised of 13 fire behavior fuel models (Anderson 1982) to 40 fire behavior fuel models (FM) (Scott and Burgan 2005); now a predictive tool commonly used in project planning. The use of FMs by the IDT during alternative development provided a method to predict likely fire behavior outcomes correlating to mapped California Wildlife Habitat Relationship (CWHR) types, to determine where sensitive watersheds, botanical and rare habitats are most vulnerable to crown fire effects.

This correlation between fuel models and CWHR types underlies the combination, placement and intensity of proposed ecologically appropriate treatments introduced in the following section: Representative Ecological (CWHR) Types. A range of tree diameter and canopy closure thresholds, low to moderate mixed severity prescribed fire treatments, and provision for scattered individual tree and patches of tree mortality for biodiversity were considered, with provision for economic outcomes (see the following sections on Forest Health, Economic Stability, and alternatives B, C, and D).

2.1.4 Forest Health

Closed forest canopies tend to shift tree species composition from shade-intolerant pine dominated stands to shade-tolerant, white fir dominated stands as depicted below; all of which have largely decreased landscape level forest heterogeneity (diversity). Despite the potentially greater resilience of large trees to survive wildfire, even in high tree density forest conditions, the present density of understory vegetation is consuming available water and nutrients important to their survival.

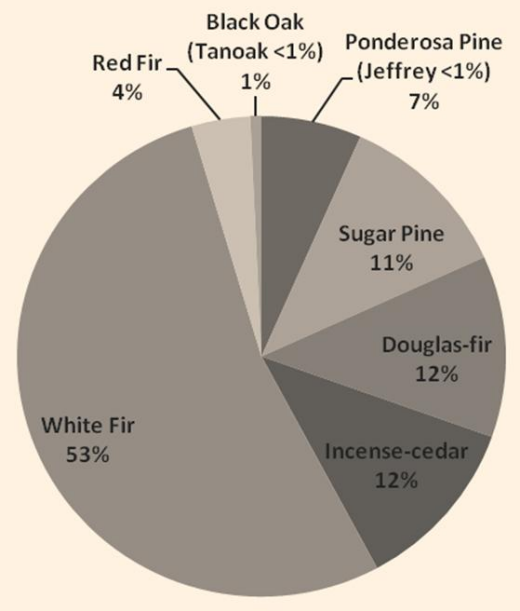


Figure 2-3. Existing average species composition of all stands in the Sugarloaf Project area, as a percentage of total basal area.

Dense or closed forest canopies tend to suppress establishment and survival of tree seedlings on the forest floor, visibly generally lacking successional stand features. As thick duff prevents bare soil contact necessary for regeneration, and continuous tree crown closure captures and stores precipitation (moisture) and restricts solar penetration, the photosynthesis process becomes interrupted and growth fails.

2.1.4.1 Representative Ecological (CWHR) Types

The following section describes the existing condition by ecological type, proposed sequence and treatment methods for areas outside the immediate 1/4 mile WUI defense zone buffer, designed to achieve desired conditions.

Variable density thinning and area thinning treatments appropriate in the outer riparian zone, hand thin appropriate in the inner riparian zone, follow with underburn.

Existing mixed conifer riparian characteristics. This suite of forest types occurs along perennial and intermittent streams throughout the project area. Large trees of any species may dominate depending on local site conditions, with heavy ingrowth of small to medium diameter white fir, Douglas-fir, and/or incense-cedar. The understory varies with local site conditions (topography, canopy cover) and stream characteristics (timing and magnitude of flow), ranging from sparse (north aspects, dense forests, adjacent to intermittent streams) to

CWHR 4 and 5 size classes in mixed conifer riparian type

robust (south aspects, open forests, adjacent to perennial streams), and often composed of mesic species such as bracken fern and mountain dogwood. Snags and coarse woody debris are primarily composed of small and medium size white fir. Vegetative conditions correlate to Fuel Model TU5.

Desired conditions. Retain a minimum of 50 percent canopy cover on south/west aspects, and 50–60 percent canopy cover on north/east aspects correlating to a Fuel Model TL1 or TL3 (fire spread rate is very slow to slow and flame length is very low to low). Understory vegetation will increase in cover and diversity.

Variable density thinning and area thinning treatments appropriate, follow with underburn.

CWHR 4 and 5 size classes in pine-dominated mixed conifer type

Existing pine-dominated mixed conifer characteristics. This forest type generally occurs on ridges and south/west facing slopes, at lower elevations of the project area. Medium to large diameter pine (ponderosa, sugar, Jeffrey) tend to dominate, with heavy ingrowth of small to medium diameter white fir and incense-cedar; individuals and clumps of black oak are often present. The understory is generally absent or sparse (prince's pine, snowberry, chinquapin, Manzanita in canopy gaps). Snags and coarse woody debris are primarily composed of small size white fir. Vegetative conditions correlate to Fuel Model (FM) TU5.

Desired Conditions. Retain a minimum of 40 percent canopy cover on ridges, south/west aspects, upper slopes and 40–50 percent canopy cover on north/east aspects, lower slopes, and near drainages. Vegetative conditions correlate with FM TL1. Understory vegetation will increase in cover and diversity.

Variable density thinning and area thinning treatments appropriate, follow with underburn.

Existing characteristics of mixed conifer with black oak clumps. This forest type generally occurs on ridges and south/west facing slopes, at lower elevations of the project area. Medium to large conifers currently dominate, often shade-tolerant species (i.e., white fir, Douglas-fir), with heavy ingrowth of small to medium diameter white fir, Doulas-fir and incense-cedar; individuals and clumps of black oak are present. Black oak clumps currently consist of intermediate and large size trees of low vigor and low crown ratio, with numerous dead trees. The understory is generally absent or sparse. Snags and coarse woody debris are primarily composed of small size white fir and black oaks of all size classes. Vegetative conditions correlate to FM TU5.

CWHR 4 and 5 size classes in mixed conifer type with black oak clumps

Desired conditions. Retain a minimum of 40 percent canopy cover, thinning small and intermediate sized shade-tolerant conifers around individuals and clumps of black oaks, and within clumps if possible while avoiding damage to residual trees. Vegetative conditions correlate with FM TL1. Understory vegetation will increase in cover and diversity, oak canopy cover will increase, and successful oak regeneration will establish.

Group selection (GS), variable density thinning, and area thinning treatments appropriate, follow with underburn.

Moist mixed conifer characteristics. This forest types is well distributed throughout the project area, with medium and large diameter trees of all species (Douglas-fir, sugar pine, ponderosa pine, incense cedar, white fir) dominate and heavy ingrowth of small to medium diameter Doug-fir, white fir, incense cedar; individuals and clumps of black oak may occur. The understory is highly variable, ranging from sparse to dense (dogwood, hazelnut, bracken fern, prince's pine, snowberry, chinquapin, Manzanita); snags and coarse woody debris dominated by all species and size classes. Vegetative conditions correlate to Fuel Model (FM) TU5.

CWHR 4 and 5 size classes in moist mixed-conifer type

Desired Conditions. Retain 40 percent canopy cover on ridges, south/west aspects, upper slopes with more pine/oak; 40–50 percent canopy cover on ridges, south/west aspects, upper slopes with more fir/cedar, north/east aspects, lower slopes, near drainages with more pine/oak, and 50–60 percent canopy cover on north/east aspects, lower slopes, near drainages with more fir/cedar. Vegetative conditions correlate with fuel model (FM) TL1 or TL3. Understory vegetation will increase in cover and diversity.

Group selection (GS), variable density thinning, and area thinning treatments appropriate, follow with underburn.

White-fir and fir-dominated mixed conifer characteristics: This forest type generally occurs on north/east facing slopes at higher elevations; generally dominated by dense small and medium size white fir and scattered medium and large individual white fir, incense cedar and sugar pine. The understory tends to be sparse (currant, gooseberry, snowberry, prince's pine, whitethorn, chinquapin, huckleberry oak in canopy gaps); with snags and coarse woody debris mostly composed of white fir.

CWHR 4 and 5 size classes in White-fir and fir-dominated mixed conifer type

Desired Conditions: Retain 40–50 percent canopy cover on ridges, south/west aspects, upper slopes and retain 50–60 percent canopy cover on north/east aspects, lower slopes, near drainages.

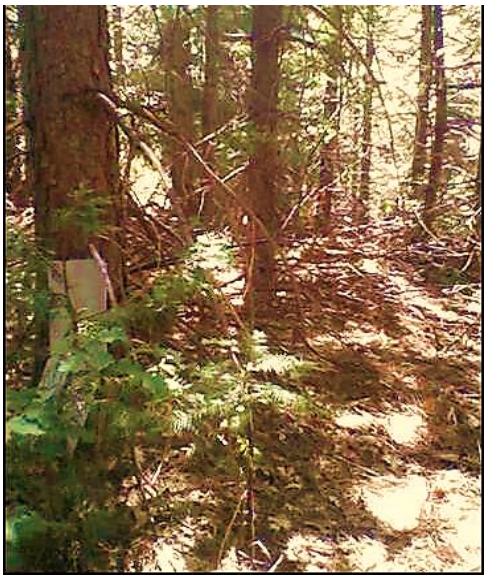
Vegetative conditions correlate with FM TL3. Understory vegetation will increase in cover and diversity.

Mastication treatment appropriate, follow with underburn.

Older pine plantations characteristics: This forest type is dominated by ponderosa pine, 15–30 years old, 8–12 inch diameter, 8–12 foot spacing, natural regeneration tends to be variable (light to heavy), composed of white fir, incense cedar, Douglas-fir. The understory tends to be variable (sparse to heavy), composed of manzanita, whitethorn and deerbrush.

Desired Conditions: Retain largest and most vigorous trees of representative species at 18–25 foot spacing, with increased canopy base height and reduced ladder fuels, correlating to FM TL1 (Spread rate is very low; flame length very low). Understory vegetation diversity will increase.

Mastication and hand thin, pile and burn treatment appropriate.



CWHR 3 size class in older pine plantation type

Younger pine plantations characteristics: This forest type is dominated by ponderosa pine, <20 years old, <8 inch diameter, 8–12 foot spacing (variable), natural regeneration tends to be variable (light to heavy), composed of white fir, incense cedar, Douglas-fir. The understory tends to be heavy with manzanita, whitethorn, deerbrush, chinquapin and bitter cherry.

Desired Conditions: Retain largest and most vigorous trees of representative species at 18–25 foot spacing, with increased canopy base height and reduced ladder fuels, correlating to FM TL1. Understory vegetation diversity will increase.

Mastication and hand thin, pile and burn treatment appropriate.

CWHR 1 and 2 size classes in younger pine plantation type

Douglas-fir and mixed-species plantations characteristics: This forest type is dominated by Douglas-fir, or Douglas-fir and pine, may include sugar pine, ages range 10–30 years old, diameters range 2–12 inch highly variable spacing. Natural regeneration tends to be variable (light to heavy), composed of white fir, incense cedar, Douglas-fir. The understory tends to be variable (sparse to heavy), whitethorn, manzanita, chinquapin, huckleberry oak, dogwood, snowberry and bitter cherry.

Desired Conditions: Retain largest and most vigorous trees of representative species at 18–25 foot spacing, with increased canopy base height and reduced ladder fuels, correlating to FM TL1 or TL3.

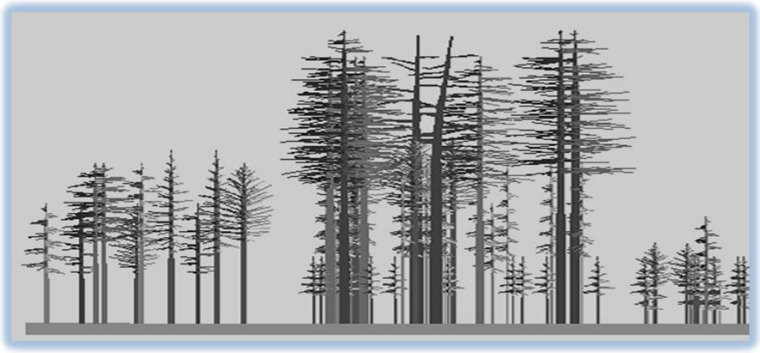
2.1.4.2 Treatment Method Descriptions

The following section provides a detailed description of mechanical, manual (hand work), prescribed fire and road related activities, introduced under the previous discussion of representative ecological (CWHR) types considered sustainable and effective.

Variable density thinning: Removal of individuals and groups within stands, of various sizes and densities. Thin small and medium size white fir and Douglas-fir less than 24 inches dbh growing beneath the tree crown drip line of large individuals (see graphic) and small clumps (2-4 trees) of pine and oaks greater than 16 inches dbh both beneath large trees and in open stands without creating openings. The inter-tree crown spacing of residual individuals and clumps of conifers would generally be from 15 to 20 feet, favoring the retention of the healthiest, largest, and tallest Douglas-fir, incense-cedar, pine and oaks.

Thin small and medium size white-fir from around individuals and small clumps (2–8 trees) of medium and large size, pine, incense cedar, and black oak. Where clumps exist, thin white-fir and Douglas-fir approximately 18 feet (± 25 percent) around the perimeter allowing for the retention of the healthiest, largest, and tallest white fir, in**ce**nse-cedar, pine and oaks; limiting openings to less than ¼ acre.

Variable thinning prescription will be modified within 100 feet of private homes, town of LaPorte and scenic roadways to maintain a diverse, heterogeneous, multi-storied canopy that incorporates small natural appearing openings of 1/4 acre or less in size; open park-like stands of mature trees where visual penetration extends up to1/4 mile into the forest; groupings of diverse species with multi-storied canopy (blend of multiple seral stages), and stands of understory vegetation (dogwood, etc.). Large specimen, landmark trees will be retained, particularly sugar pines and Douglas fir.



Graphic illustration representing desired post treatment forest stand structure; high-density tree groups, a gaps, and lower density matrix

Area Thinning: This treatment is designed to treat ladder fuels and vegetation density by removing branches and limbs that extend to the ground, as well as removing smaller, densely spaced trees to create a greater distance between the ground surface and crown, as well as greater space between trees and tree crowns. Area Thinning treatments would be implemented where desired forest canopy is 40+ percent cover, in combination with variable density thinning methods, in small and medium tree dominated CWHR size classes 2 and 3, and in select Riparian Conservation Areas (RCAs) and other restrictive land allocations.

Area thinning treatments would mechanically remove ladder and crown fuels, thereby increasing canopy base height, spacing between trees, and spacing between tree crowns. Treatment prescriptions would allow harvest of the smaller, suppressed, intermediate-crown-class trees and some co-dominant and dominant trees to achieve the residual conifers with approximately 15 to 20 feet spacing between individuals and clumps. Species preference for the residual trees would include shade-intolerant species where they exist. Ponderosa, sugar and Jeffrey pine are most preferable, followed in order by black oak, Douglas-fir, incense-cedar, and true fir. The largest hardwood and conifer snags (>15 inches dbh) would be retained at 4 to 6 per acre. If not present, snags would be created using girdling, inoculation, or blasting of tree tops.

Alternative B only - Group Selection (GS): Harvest small and medium conifers (with the exception of pine species) for example Douglas-fir, white fir, and incense cedar from around individuals and clumps of large trees (all species) equal to or greater than 30 inches dbh, limiting forest openings to a maximum 2 acres, allowing for the retention of pine and black oak (all tree size classes). Specifically identified trees remain as seed trees for regeneration. Site preparation within group selection (GS) treatment areas would include mechanical piling and burning to treat activity slash and brush competition as well as slope re-contouring or subsoil ripping. Following site preparation, GS openings may be replanted with a shade-intolerant species mix composed of mainly rust resistant sugar pine (30 percent) and Jeffrey pine (70 percent). Natural regeneration from seeds of surrounding firs and incense-cedar is also expected to occur in these openings. First and third year survival surveys would be conducted to monitor seedling survival. If necessary, competing brush and grass within GS treatment areas would be controlled by manual grubbing and/or hand-cutting to ensure survival and growth of young seedlings.

Riparian Habitat Conservation Areas (RHCAs) and Riparian Conservations Areas (RCAs): Treatments would be limited to mastication, hand thinning, hand piling and pile burning and prescribed underburning. Prescribed fire would be ignited along contour strips upslope of the RHCA and RCAs so as flames creep downslope low intensity fire behavior is achieved, aimed to protecting hardwoods and riparian vegetation from scorch (lethal heat levels).

Hand Thinning (Manual) -Hand thinning is an activity that utilizes crews to cut understory vegetation greater than 2 feet tall to 9.9 inches dbh (5.9 inches in spotted owl PACs) to a spacing of 18 to 25 feet (±25%) in order to reduce ladder fuels. Hand thinning is generally restricted to areas where mechanical treatment is infeasible due to access restrictions, excessive slope or type/size of vegetation being removed. Shrubs and trees >2 feet in height to 9.9 inches dbh would be manually cut from beneath overstory trees and/or aggregations of small diameter conifers, followed by hand pile and burn.

Hand Piling/Mechanical (Grapple) Piling and Burning: After vegetation is hand thinned, the cut trees, shrubs and existing slash would be piled by tractor or by hand into burn piles and covered with a waterproof barrier to keep the material dry. Pile placement would minimize damage to residual trees. The piles are subsequently burned in the winter months or during periods of low fire danger. This treatment removes ladder and surface fuels throughout the treatment unit.

Mastication: A masticator is a low ground pressure piece of equipment that cuts and shreds brush, small understory trees less than 10 inches dbh and downed woody fuels. Trees would be masticated to a spacing of 18–25 feet (±25%). Mastication does not actually remove any wildland fuels from the

treated area, but changes the size, continuity, and arrangement of the fuels, resulting in a change in fire behavior.

Underburning: Prescribed fire or underburning would consume surface fuels, understory, and, in rare cases, larger trees. Surface fuels are the primary agent of fire spread. The objective is to apply controlled fire under optimum conditions to modify fuel conditions to effectively reduce fire behavior and the corresponding intensity of a future wildfire. The goal of the treatment in this project would be to consume a significant portion of surface fuels and understory vegetation in order to reduce future fire severity. Includes all of the steps necessary to prepare and implement a prescribed burn. Examples include line construction, ignition, and mop-up of prescribed burns.

Road reconstruction: Along National Forest System (NFS) classified roads, install drainage features (culverts) capable of functioning during a 100-year flood event, adequate to contain increased bedload and debris. Realign stream crossings to remove barriers to natural hydrologic flow paths, including correcting diversion of streamflows and interception of surface and subsurface water.

Road decommissioning: For select NFS classified roads eroding near streams, remove drainage features and outslope. Allow for natural vegetative recovery to re-stabilize soils and reduce in-stream sedimentation downhill.

Road Obliteration: For select legacy, non-classified roads and user created routes eroding near streams, outslope and restore the natural slope gradient. Allow for natural vegetative recovery to re-stabilize soils and reduce in-stream sedimentation downhill.

2.1.5 Economic Stability

The IDT considered current market trends and public advice linked to operational efficiency aimed at affording a broad spectrum of marketable goods and job opportunities to contribute to the economic stability of rural communities. The following design criteria are common to all action alternatives (B, C, and D):

Minimum 5,000 board feet (bf) per acre of sawlog removal (conifers greater than 10 inches dbh) for ground-based logging systems; restricted to less than 35 percent slope;

Minimum 7,000 bf per acre of sawlog removal for cable (skyline) logging systems;

In general, the sequence of implementation would start with primary mechanical treatments to offset operational costs and reduce fuel concentrations, allowing for secondary manual and prescribed fire treatments; planned for completion in 5–7 years.

Alternatives address biomass uniquely, as discussed in the following alternative sections.

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Wildlife. The IDT's strategy for managing habitats lies within the framework for establishing desired conditions, by directly altering forest and riparian habitat attributes; also aimed at indirectly influencing ecological processes and functions. The desired conditions represent the endpoints underlying treatment methods designed to preserve rare populations.

Management activities on National Forest System (NFS) lands are planned so they do not jeopardize the continued existence of threatened or endangered, proposed, candidate or Management Indicator Species (MIS), or that would lead to a trend toward listing or loss of viability of Forest Service Sensitive species (36 CFR 219). The Sierra Nevada (mountain) yellow-legged frog (SNYLF) is a USFS Region 5 Sensitive Species. The SNYLF is also a federal candidate species for listing by the USFWS under the Endangered Species Act. A candidate species is a species that warrants listing but is precluded due to higher priority actions (Fed. Reg. Vol. 68, No 11, 2283-2303). SNYLF have been found in step pools within high gradient Roesgen A and B channel type head water streams on Dark Ravine Creek and its tributaries.

The PNF LRMP 1988 includes management direction aimed at improving habitat capability and sustaining viable populations of aquatic (stream and riparian) dependent species. The SNFPA FEIS and ROD USDA (USDA 2004) include standards and guidelines for surveys, limited operating periods (LOPs), Habitat Monitoring and Riparian Conservation Areas (RCAs) buffers applicable to alternatives C and D. Direction from the HFQLG Act, FEIS, and ROD (USDA 1999a, b) is unique and only applies to alternative B. Although land management riparian buffers are defined uniquely, proposed treatment placement and intensities are similar for all action alternatives to mitigate short term risks to watershed resources:

> Retain Sierra Nevada (mountain) yellow-legged frog (SNYLF) habitat by avoiding all treatments in occupied habitat (up to 300 foot buffer).
>
> Retain sufficient large down wood in streams and on the forest floor for habitat, soil stability and productivity and adequate decaying wood to support insects, rodents and fungal life.

In order to preserve suitable California spotted owl (CSO) and North goshawk (NOGO) habitats, no mechanical treatments are proposed under any of the action alternatives in designated protection activity centers (PACs). In particular, alternative B applies standards and guidelines from the *Herger-Feinstein Quincy Library Group Forest Recovery Act* (HFQLGFRA), which defers timber harvesting from spotted owl habitat areas (SOHAs) and CSO PA Cs. See figure 2-4 for PACs located within and adjacent to the Project area.

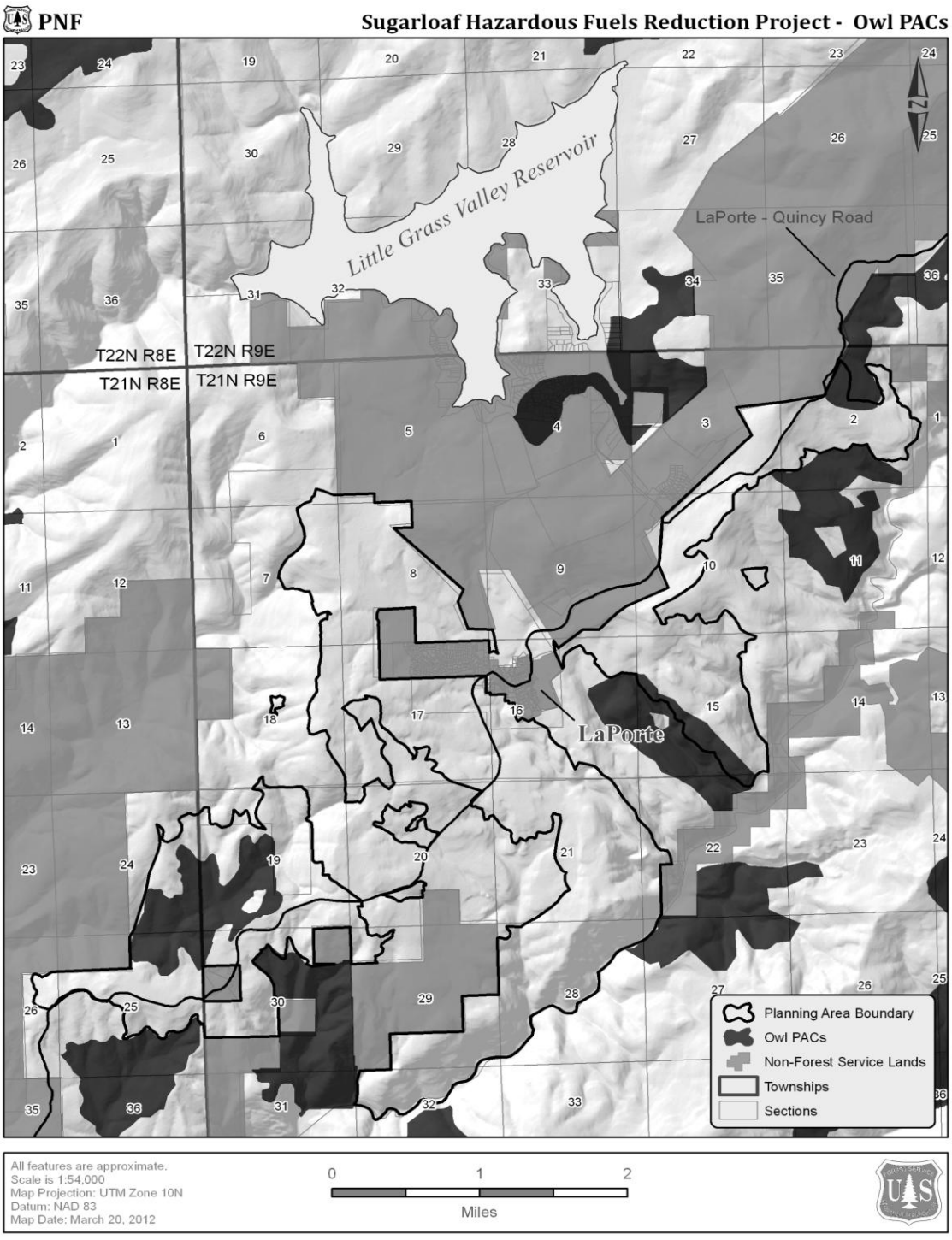

Figure 2-4. Protected Activity Centers (PACs) within the Sugarloaf Project area.

Only habitats considered at high risk to stand replacing wildfire within the WUI zone would be strategically treated using prescribed fire and select hand cutting (manual) methods. Treatments proposed with the Valley Creek Special Interest Area (SIA) and spatially overlapping NOGO PAC and CSO PAC would not exceed 5 percent per year or 10 percent per decade; designed to ensure the overall effectiveness of the landscape of fire and fuel strategy. The following design criteria common to all action alternatives would be applied:

Hand thinning would be limited to trees less than 9.9 inches dbh in general; constrained to less than 5.9 inches in Northern Goshawk Protection Activity Centers (PAC), spatially overlapping the Valley Creek Special Interest Area (SIA).

Two green cull (rotten) replacement wildlife trees per acre minimum retention select areas; create if necessary; preferably greater than 20 inches dbh when available; except within ¼ mile of private properties.

A limited operating period (LOPs) would be applied to minimize potential for noise and smoke disturbance.

Retain hardwoods greater than 12 inches dbh and cottonwood trees.

Retain all live trees greater than or equal to 30 inches dbh, 5 percent minimum in post-harvest treatment acres in stems 6–24 inches dbh.

Retain 40 percent minimum basal area (BA) in the largest trees in CWHR 5M, 5D, and 4D classes.

Retain important habitat components such as 4 snags (15 inches dbh and greater) per acre on the landscape, and 10–15 tons per acre of large down wood (8–12 logs, 20 inches diameter and 10 foot length minimum).

Public Health and Safety. The interdisciplinary team (IDT) incorporated standard operating procedures common to all action alternatives to address public health and safety. All project activities (Forest Service and contract) would comply with State and Federal Occupational Safety and Health (OSHA) codes and are guided by FS Handbook 6709.11 (Health and Safety Code Handbook).

Smoke emissions during prescribed burning, fugitive dust from equipment transport and log haul and emissions from mechanical equipment during treatment operations would be mitigated by applying contract provisions B6.33 and C5.31; aimed at minimizing temporary impacts to airshed and driver visibility due to drifting smoke. The following mitigation measures apply to restorative underburing to ensure compliance with Title 17 of the 2004 California air pollution control laws and interim air quality policy and local smoke management programs:

1. Conduct prescribed burns when favorable smoke dispersal is forecasted, especially near sensitive Class I areas.

2. Use appropriate smoke modeling software to predict smoke dispersion.

3. Minimize smoke emissions by following Best Available Control Methods.

4. Avoid burning on high visitor days and notify the public before burning.

Burning permits would be acquired from the Northern Sierra Air Quality Management District. The Air Quality Management District would determine when burning is allowed. The California Air Resources Board provides daily information on burning conditions.

Leaving untreated, sometimes sharp-edged slash in proximity to private land can be potentially hazardous to visitors and nearby landowners. A minimum 50 feet buffer restricting mastication along main roads, trails and residential properties would be applied.

During timber operations and log hauling, signs and flaggers would be on site to direct traffic.

2.1.6 Alternative A - No Action Alternative

Under the no action alternative (A), land management activities would not take place to address the elements of the purpose and need at this time. However, as required by NEPA, the no action alternative is included and analyzed in this DEIS as a baseline, against which the action alternatives B, C, and D can be compared. Although under alternative A no active management is proposed, the lack of action also has discrete, indirect consequences, as described in chapter 3 of this DEIS.

2.1.7 Alternative D – Preferred Proposed Action

Alternative D is designed to balance reducing risks to life, property, rare habitats and recovering watershed resources from wildfire, supporting economic stability and moving wildlands toward desired ecologically healthy conditions. Alternative D provides an estimated $277,643 net timber harvest revenue from an estimated 4.6 million board feet of timber to off-set some of the cost of operations designed to improve localized water quality and restore free-flowing cold waterway connectivity of streams and other special aquatic features. This alternative would provide an estimated 147 forestry jobs associated with implementation. This alternative, similar to alternative C, was designed within the framework of land management direction in the Plumas National Forest Land and Resource Management Plan (PNF LRMP) (USDA 1988) as amended by the Sierra Nevada Forest Plan Amendment Final Supplemental EIS (SFNPA FSEIS) and Record of Decision (ROD) (USDA 2004a, 2004b).

Alternative D best responds to the significant issue for cumulative watershed effects (CWE) compared to alternatives B and C, by retaining 10–20 percent higher (50–60) percent forest canopy closure near streams, applying less acres of timber harvest including eliminating units requiring skyline (cable) logging systems, and establishing strategic upslope reserves (positioned on steep slopes); designed to minimize the potential for contributing to cumulative watershed effects. This alternative avoids up to 2.0 acre group selection (GS) treatments as proposed under alternative B or ½ acre gaps under alternative C; rather, it limits gaps to 1/4 acre in size and employs less intensive area thinning in California wildlife habitat relationship (CWHR) size classes 4M, 4D, 5M, and 5D retaining 50–60 percent canopy closure; particularly near streams.

Alternative D incorporates identical road-related watershed restoration activities as alternative B. Watershed restoration activities depicted on Map 2.15 target roads and trails that are intercepting, diverting or disrupting natural surface water flow paths near streams or require drainage infrastructure upgrades to restore flow connectivity. The preferred alternative D is unique however, in that it would

improve road drainage of 1 mile on NFS roads solely to reduce associated in-stream sedimentation, whereas alternative B includes improvements to expedite timber hauling. Alternative C targets reducing hazardous fuels and does not incorporate forest and watershed road restoration activities as listed below; designed to improve watershed health:

- Obliterating 8.8 miles of non-system (unclassified) roads outside the Valley Creek Special Interest Area (SIA);
- Obliterating 1.0 mile of non-system (unclassified) road within the Valley Creek SIA;
- Decommissioning 0.7 mile of NFS (classified) road; and,
- Redesigning and upgrading road drainage features along priority NFS roads PC511A, 22N53, 21N18A and 21N42Y such as out-sloping road segments, installing armored rolling dips and replacing culverts.

The Sierra Nevada Forest Plan Amendment Final Supplemental EIS (SFNPA FSEIS) and Record of Decision (ROD) (USDA 2004a, 2004b) require new proposed management activities within Riparian Conservation Areas (RCAs) are evaluated during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the Aquatic Management Strategy (AMS) goals for the landscape. As part of project-level analysis, the interdisciplinary team (DT) conducted peer reviews for proposed ground-disturbing activities, allowing for more than 25 percent entry into the RCA to ensure appropriate mitigation measures would be enacted to (1) minimize the risk of activity-related sediment entering aquatic systems and (2) minimize impacts to habitat for aquatic- or riparian-dependent plant and animal species.

The SFNPA FSEIS and ROD (USDA 2004a, 2004b) allows for project level adjustments to the standard RCA widths described below, if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths. The IDT most recently updated the Slate-Canyon Rapid Landscape Assessment (USDA 2013), to determine if adjustments to RCA widths were warranted. The IDT findings indicate changes to standard RCA buffers are not necessary to achieve restoration goals. Alternative D, identical to alternative C, applies standard RCA buffer widths as follows:

- *Perennial Streams:* 300 feet on each side of the stream, measured from the bank full edge of the stream.
- *Seasonally Flowing Streams (includes intermittent and ephemeral streams):* 150 feet on each side of the stream, measured from the bank full edge of the stream.
- *Streams in Inner Gorge*: top of inner gorge (stream adjacent slopes greater than 70 percent gradient).
- Special Aquatic Features or Perennial Streams with Riparian Conditions extending more than 150 feet from edge of streambank or Seasonally Flowing streams with riparian conditions extending more than 50 feet from edge of streambank: 300 feet from edge of feature or riparian vegetation, whichever width is greater.

- *Other hydrological or topographic depressions without a defined channel*: RCA width and protection measures determined through project level analysis.

Alternative D, identical to alternative C, proposes treatments within standard RCA buffer widths as follows:

- *Mastication*: Apply a 75 foot buffer for all perennial streams. Apply a 25 foot equipment exclusion zone buffer for ephemeral streams without annual scour. Apply a 50 foot equipment exclusion zone buffer for all ephemeral streams with annual scour, and intermittent, and perennial streams that do not have fish. Apply a 75 foot buffer on all intermittent and perennial streams that have fish. Note: if SNYLF's are found prior to implementation the 25 foot equipment exclusion zone on intermittent streams would be increased to 75 feet; up to 300 feet.

- *Mechanical thinning*: Apply a 50 foot equipment exclusion zone buffer for ephemeral streams without annual scour. Apply a 150 foot equipment exclusion zone buffer for all ephemeral streams with annual scour, intermittent, and perennial streams that don't have fish. Apply a 300 foot buffer on all intermittent and perennial streams that have fish.

- *Handcut/Pile/Burn (HCPB):* No buffer on all ephemeral streams, but retain at least 50 percent canopy cover and all riparian vegetation post treatment. Piles should be at least 25 feet from edge of stream. *Apply a 25 foot* buffer to all intermittent and perennial streams that don't have fish. Apply a 50 foot buffer to intermittent and perennial streams that do have fish. No HCPB treatment will occur within these buffers except for in ephemerals. If SNYLF's are found prior to implementation the no treatment buffer would be set to 75 feet; up to *300 feet*, regardless of the stream type (applies to all action alternatives).

- *Hand cut/Grapple Pile (HCGP):* Apply a 50 foot equipment exclusion buffer for ephemeral streams. Intermittent and perennial streams that don't have fish will have a 75 foot buffer. Apply a 100 foot equipment exclusion buffer for intermittent and perennial streams that do have fish. If SNYLF's are found prior to implementation then an additional LOP will apply within a mile of SNYLF's detection (applies to all action alternatives).

- *Underburning (UB):* Fire ignition would be prohibited within the buffer, but would be allowed to back into the buffer; exception is aquatic reserves to protect known rare aquatic populations where no UB is allowed within 300 feet either side of the stream channel.

2.1.7.1 Area and Variable Thinning (Mechanical)

Area and Variable Thinning treatments are designed to retain 40–60 percent canopy cover using area thinning methods in small and medium tree dominated CWHR size classes 4 and 5, and in select Riparian Conservation Areas (RCAs) and PACs. The preferred alternative D applies a unique canopy thinning treatment strategy from those proposed under alternatives B and C.

Alternative D would apply area thinning on south-facing slopes in the WUI defense zone and along ridgetops and upper slopes, allowing for removal of trees up to 30 inch dbh while retaining a minimum 40 percent canopy cover. Forest gaps up to a 1/4acre are allowable. Forest canopy cover retention increases to 40–50 percent at a minimum on mid-slopes, with variable thinning applied on north aspects; allowing for removal of trees up to 24 inches dbh. The lower slopes and Riparian Conservation Areas (RCAs) would be maintained at 50–60 percent canopy cover using variable thinning methods, allowing for removal of trees up to 20 inches dbh, outside restricted riparian buffers.

Treatments proposed with the Valley Creek Special Interest Area (SIA) and spatially overlapping NOGO and CSO PACs would not exceed 5 percent per year or 10 percent per decade, and would be limited to prescribed underburning. Manual hand cutting of small trees and shrubs is limited to within 250 feet either side of main road access routes; retaining a minimum of 50 percent canopy cover. The following list includes proposed treatments and associated prescriptions as a first entry outside:

- 859 acres of mechanical variable density thinning and 76 acres of area thinning of trees less than 30 inches dbh, retaining 40-60 percent forest canopy cover, utilizing ground-based logging systems (see table 2-1 below for prescription description). Canopy cover and diameter limits at the stand level would be based on topography, and within-stand variability would be incorporated by focusing on the creation of clumps and gaps (1/8 to 1/4 acre in size). Trees greater than 10.0 inches dbh would be removed as sawlogs;

- 3.6 miles of NFS road reconstruction, 2 miles of temporary road construction and 24 new landings;

- 911 acres of hand thin, pile, and pile burn trees less than 10.0 inches dbh (5.9 inches in PACs);

- 71 acres of hand thin, grapple pile, and burn;

- 278 acres of masticating brush and trees less than 10 inches dbh to 18–25 foot spacing and retain all hardwoods except where removal is necessary to facilitate operations;

- 1,558 acres low to moderate intensity prescribed underburn; and,

Second entry treatments would include:

- 490 acres of follow-up hand thin, pile, and burn;

- 1,772 acres of follow-up underburning.

Third entry treatments would include:

- 268 acres of follow-up underburning.

Table 2-1. Alternative D: Area and Variable Density Thinning Treatments.

Prescription	Diameter Limit (inch)	Canopy Cover (percent)	Acres
Area Thin	30	40–50	76
Variable Density	20, 24, and 30	40, 40–50, and 50–60	859
		Total	935

2.1.7.2 Watershed Improvements

Approximately 0.7 mile of non-system road, would be proposed for decommissioning upon project completion and an estimated 9.8 miles of non-system roads would be obliterated to reduce sedimentation. There are 3.6 miles of road reconstruction that would occur solely to improve drainage infrastructure to reduce down stream sedimentation.

Roads that are to remain open but are improperly constructed or unmaintained would be improved. Treatments range from light brushing with no drainage improvements to heavy brushing and large drainage improvements (figure 2-5). Drainage improvements may include: out sloping road segments, installing armored rolling dips, or replacing culverts. Rolling dips, which would likely be one of the most commonly prescribed road improvements for the Sugarloaf Project, are generally installed at a frequency of 1–4 dips per mile of road. This estimate may vary depending on the existing condition of the road drainage system and the number of stream crossings present. Each dip would be approximately 15 feet long and as wide as the existing road surface. Placement of dips to sufficiently disconnect the road drainage system from nearby stream channels would be determined by District watershed staff. Roads were selected for improvement (maintenance or reconstruction) based on planned future use for resource management and recreational activities, and threat posed to watershed values due to erosion and sedimentation.

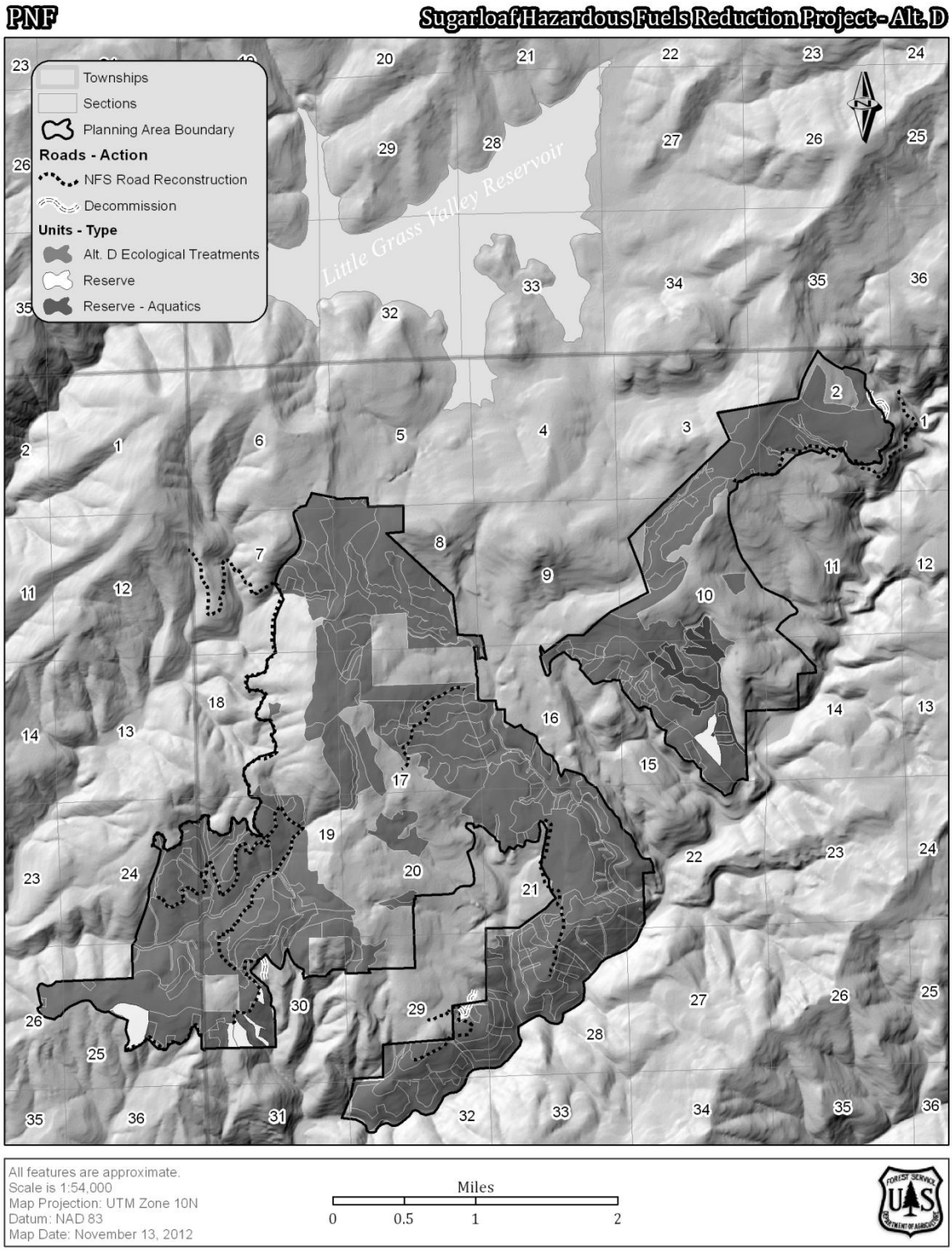

Figure 2-5. Alternative D – Proposed Treatments on NFS lands.

2.1.8 Alternative B Herger-Feinstein Quincy Library Group Pilot Project

The 2004 Record of Decision on the SNFPA final supplemental EIS directed the Plumas National Forest to implement the HFQLG Pilot Project; alternative 2 of the HFQLG EIS. Alternative B is designed to test and demonstrate the effectiveness of *HFQLG Forest Recovery Act* pilot fuels, vegetation and riparian restoration activities in meeting ecologic, economic, and fuel reduction objectives. This 2004 Decision includes direction for HFQLG Forest Recovery Act Pilot Project activities and standards and guidelines (see table 2 in the 2004 SNFPA ROD), unique to those applied under alternatives C and D.

Alternative B emphasizes filling in gaps in the defensible fuel profile zone (DFPZ) network to reduce risks to life, property, rare habitats and recovering watershed resources from wildfire, establishing Group Selection (GS) up to 2 acre forest openings to support economic stability, while moving wildlands toward desired ecologically healthy conditions. Alternative B would generate an estimated 5.3 million board feet of timber to off-set some of the cost of operations. This alternative would provide an estimated 186 forestry jobs associated with implementation.

Alternative B responds to the significant issue for cumulative watershed effects (CWE) incorporating identical road-related watershed restoration activities as alternative D. Watershed restoration activities depicted on Map 2.15 target roads and trails that are intercepting, diverting or disrupting natural surface water flow paths near streams or require drainage infrastructure upgrades to restore flow connectivity as listed below; designed to improve watershed health:

- Obliterating 8.8 miles of non-system (unclassified) roads outside the Valley Creek Special Interest Area (SIA);
- Obliterating 1.0 mile of non-system (unclassified) road within the Valley Creek SIA;
- Decommissioning 0.7 mile of NFS (classified) road; and,
- Redesigning and upgrading road drainage features along priority NFS roads PC511A, 22N53, 21N18A and 21N42Y such as out-sloping road segments, installing armored rolling dips and replacing culverts.

Alternative B, unique from alternatives C and D, applies standard riparian habitat conversation areas (RHCAs) buffer widths as follows:

- *Perennial fish bearing streams and lakes:* 300 feet on each side of perennial fish bearing streams and lakes, measured from the bank full edge.
- Perennial non-fish bearing streams, ponds, wetlands greater than 1 acre, and lakes): 150 feet on each side of the feature, measured from the bank full edge.
- *Intermittent and ephemeral streams, wetlands less than 1 acre, and landslides*: Minimum 100 feet on each side of the feature, measured from the bank full edge. Features influencing site-specific RHCA buffers include: (1) top of inner gorge, (2) 100-year floodplain, (3) Outer edge of riparian vegetation, and (4) A distance equal to one or two tree heights. The average height of a site potential tree has been

determined to be 150 feet on the Feather River Ranger District. This means a 150-foot RHCA buffer width is applied to seasonally flowing streams (intermittent or ephemeral) that have a definable channel and evidence of annual scour and deposition, instead of a 100 foot RHCA buffer.

- Streamside Management Zones (SMZs) SMZs varies from 0 to 50 feet of either side of the stream reach. For ephemeral streams, the range is 25 to 50 feet depending on active stream channel conditions and slope stability (see the 1988 Plumas National Forest Land Resource Management Plan; appendix M).

Alternative B, similar to alternatives C and D in standard riparian conservation areas (RCAs), proposes treatments within standard RHCA and SMZ buffers as follows:

- *Groups Selection, Mechanical Thinning and Radial Thinning:* Maintain standard RHCAs. These treatments by mechanical equipment would not occur within the full width of RHCAs. 150 feet for non-fish bearing and 300 feet for fish bearing on each side of stream.

- *Mastication:* Apply a 25 foot buffer for SMZs, a 50 foot buffer for all non-fish bearing streams and a 75 foot buffer for fish bearing streams.

- *Handcut/Pile/Burn (HCPB):* No buffer on all ephemeral streams, but retain at least 50 percent canopy cover and all riparian vegetation post treatment. Piles should be at least 25 feet from edge of stream. Apply a 25 foot buffer to all other non-fish bearing streams and a 50 foot buffer to fish bearing streams.

- *Handcut/Grapple Pile (HCGP):* 50 foot buffer for ephemeral streams, 75 feet for all other non-fish bearing and 100 feet for fish bearing streams.

- *Underburns (UB):* Use RHCA widths, but buffer is not a no-treatment buffer. Fire ignition would be prohibited within the buffer, but would be allowed to back into the buffer.

Alternative B is unique from alternatives C and D, in that fuels reduction and forest health treatments are designed per table 2 in the 2004 SNFPA ROD standards and guidelines; specific to tree removal mandates of minimum retention percentages for basal area and canopy cover in size classes CWHR 4M, 4D, 5M, and 5D.

Alternative B uniquely applies Group Selection (GS) treatments, positioned away from LaPorte and American House, as well as drainages subject to prevailing winds with potential to funnel flames toward residential properties. Forest openings (GS) would be established up to a 2.0 acres in size. The IDT limited the application of GSs near private property, because plantations associated with GS represent fuel hazards during a wildfire. These areas are instead proposed for mastication, hand cut, pile and burn and/or underburn. The areas identified as being at or below basal area and canopy cover retention standards were eliminated from further consideration for Group Selection.

Alternative B would apply area thinning on south-facing slopes in the WUI defense zone and along ridgetops and upper slopes, allowing for removal of trees up to 30 inch dbh while retaining a minimum 40 percent canopy cover (figure 2-6).

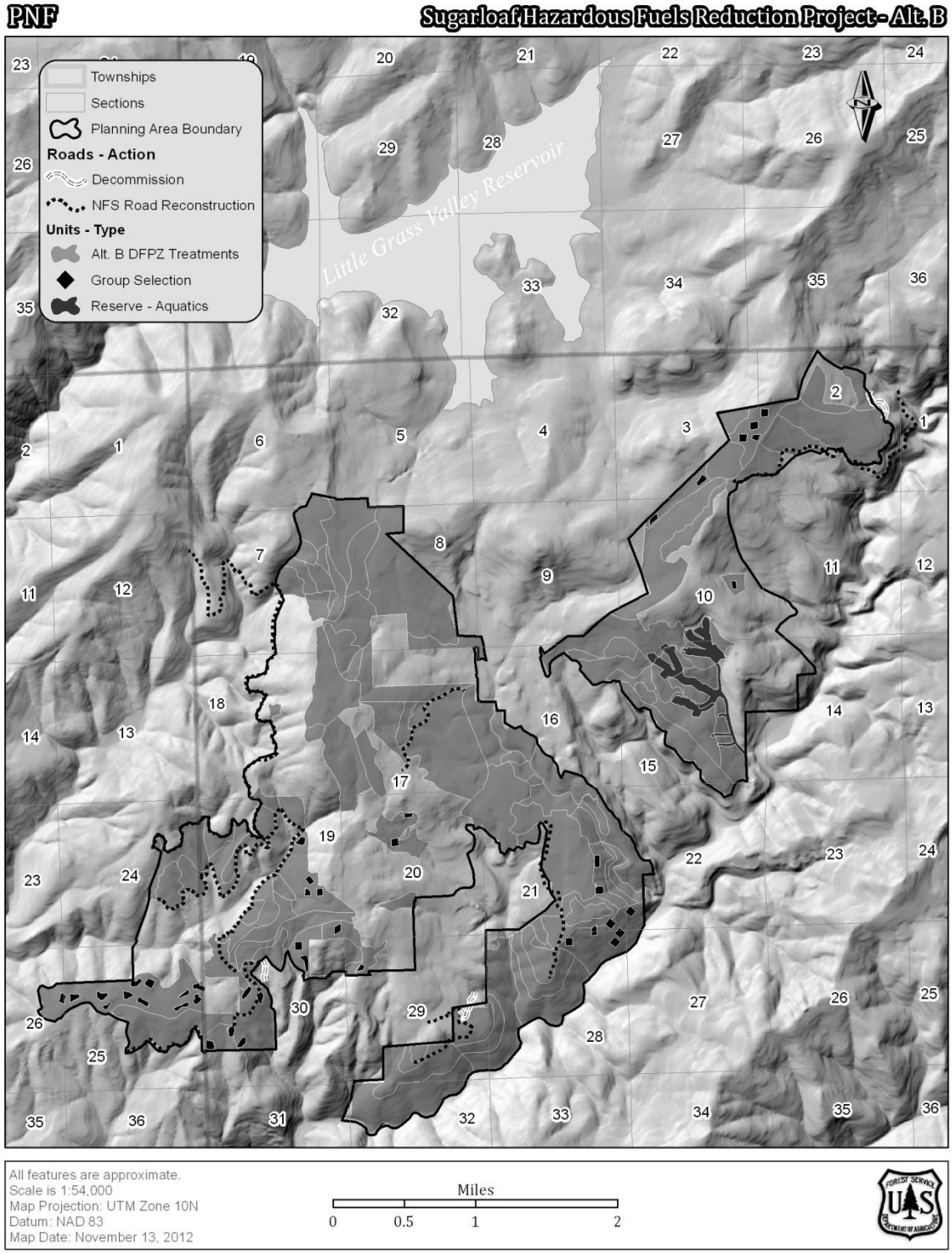

Figure 2-6. Alternative B - Proposed Treatments on NFS lands.

Forest canopy cover retention would average 40 percent canopy cover, increasing to 40–50 percent on north aspects; allowing for removal of trees up to 30 inches dbh. The lower slopes and Riparian Conservation Areas (RCAs) would be maintained at 40–50 percent canopy cover using variable thinning methods, allowing for removal of trees up to 30 inches dbh, outside restricted riparian buffers.

Treatments proposed with the Valley Creek Special Interest Area (SIA) and spatially overlapping NOGO and CSO PACs would not exceed 5 percent per year or 10 percent per decade, and would be limited to prescribed underburning. Manual hand cutting of small trees and shrubs is limited to 250 feet either side of main road access routes; retaining a minimum of 50 percent canopy cover.

Under alternative B, first entry treatment prescriptions would include:

992 acres of mechanical DFPZ thinning with 763 acres of variable density thinning and 229 acres of area thinning of trees less than 30 inches dbh, retaining 40–50 percent forest canopy cover, utilizing ground-based and skyline logging systems. Trees greater than 10.0 inches dbh would be removed as sawlogs;

71 acres of group selection (GS);

223 acres of mastication;

375 acres of hand thin, pile, and burn;

4.9 miles of NFS road reconstruction, 4.3 miles of temporary road construction and 31 landings; and,

1,989 acres of phase 1 prescribed fire using manual ignition (i.e., drip torch) techniques.

Second entry treatments would include:

308 acres of follow-up hand thin, pile, and burn;

1,771 acres of follow-up underburning.

Third entry treatments would include:

159 acres of follow-up underburning.

2.1.8.1 Watershed Improvements

Approximately 0.7 mile of non-system road, would be proposed for decommissioning upon project completion and an estimated 9.8 miles of non-system roads would be obliterated to reduce sedimentation.

Roads that are to remain open but are improperly constructed or unmaintained would be improved. Treatments range from light brushing with no drainage improvements to heavy brushing and large drainage improvements. Drainage improvements may include: out sloping road segments, installing armored rolling dips, or replacing culverts. Rolling dips, which would likely be one of the

most commonly prescribed road improvements for the Sugarloaf Project, are generally installed at a frequency of 1–4 dips per mile of road. This estimate may vary depending on the existing condition of the road drainage system and the number of stream crossings present. Each dip would be approximately 15 feet long and as wide as the existing road surface. Placement of dips to sufficiently disconnect the road drainage system from nearby stream channels would be determined by District watershed staff. Roads were selected for improvement (maintenance or reconstruction) based on planned future use for resource management and recreational activities, and threat posed to watershed values due to erosion and sedimentation.

2.1.9 Alternative C - Non-Commercial Funding Alternative

A recent court ruling requires the USDA Forest Service to analyze a non-commercial funding alternative for all projects that either solely or incorporate hazardous fuels as an element of the purpose and need for the proposed action. The non-commercial funding alternative provides a comparison of predicted environmental effects of solely achieving fuels reductions objectives, without achieving forest health and watershed restoration objectives, as proposed under alternatives B and D. This non-commercial funding alternative would only harvest timber as an administrative mechanism to recover the economic value of the wood by-products to achieve desired fuel condition objectives (*Sierra Forest Legacy v. Mark Rey*, Case 2:05-cv-00205-MCE-GGH, Morrison C. England, Jr., United States District Court Judge, United States District Court, Eastern District of California, November 4, 2009).

Alternative C establishes fuel treatments for the sole purpose and need to modify fire behavior at a landscape scale. Similar to alternatives B and D, this alternative aims to affect fire behavior at a landscape scale; designed to apply more intensive mechanical area thinning treatments along ridgetops and adjacent to private development in LaPorte, American House and surrounding dispersed private inholdings. Alternative C, identical to alternative D, applies standard RCA buffer widths per SFNPA FSEIS and ROD (USDA 2004a, 2004b) as follows:

- *Perennial Streams:* 300 feet on each side of the stream, measured from the bank full edge of the stream.
- *Seasonally Flowing Streams (includes intermittent and ephemeral streams):* 150 feet on each side of the stream, measured from the bank full edge of the stream.
- *Streams in Inner Gorge*: top of inner gorge (stream adjacent slopes greater than 70 percent gradient).
- Special Aquatic Features or Perennial Streams with Riparian Conditions extending more than 150 feet from edge of streambank or Seasonally Flowing streams with riparian conditions extending more than 50 feet from edge of streambank: 300 feet from edge of feature or riparian vegetation, whichever width is greater.
- *Other hydrological or topographic depressions without a defined channel*: RCA width and protection measures determined through project level analysis.

Alternative C, identical to alternative D, proposes treatments within standard RCA buffer widths as follows:

- *Mastication*: Apply a 75 foot buffer for all perennial streams. Apply a 25 foot equipment exclusion zone buffer for ephemeral streams without annual scour. Apply a 50 foot equipment exclusion zone buffer for all ephemeral streams with annual scour, and intermittent, and perennial streams that don't have fish. Apply a 75 foot buffer on all intermittent and perennial streams that have fish. Note: if SNYLF's are found prior to implementation the 25 foot equipment exclusion zone on intermittent streams would be increased to 75 feet; up to 300 feet

- *Mechanical thinning*: Apply a 50 foot equipment exclusion zone buffer for ephemeral streams without annual scour. Apply a 150 foot equipment exclusion zone buffer for all ephemeral streams with annual scour, intermittent, and perennial streams that don't have fish. Apply a 300 foot buffer on all intermittent and perennial streams that have fish.

- *Handcut/Pile/Burn (HCPB):* No buffer on all ephemeral streams, but retain at least 50 percent canopy cover and all riparian vegetation post treatment. Piles should be at least 25 feet from edge of stream. *Apply a 25 foot* buffer to all intermittent and perennial streams that don't have fish. Apply a 50 foot buffer to intermittent and perennial streams that do have fish. No HCPB treatment will occur within these buffers except for in ephemerals. If SNYLF's are found prior to implementation the no treatment buffer would be set to 75 feet; up to 300 feet, regardless of the stream type (applies to all action alternatives).

- *Hand cut/Grapple Pile (HCGP):* Apply a 50 foot equipment exclusion buffer for ephemeral streams. Intermittent and perennial streams that don't have fish will have a 75 foot buffer. Apply a 100 foot equipment exclusion buffer for intermittent and perennial streams that do have fish. If SNYLF's are found prior to implementation then an additional LOP will apply within a mile of SNYLF's detection (applies to all action alternatives).

- *Underburning (UB):* Fire ignition would be prohibited within the buffer, but would be allowed to back into the buffer; exception is aquatic reserves to protect known rare aquatic populations where no UB is allowed within 300 feet either side of the stream channel.

Under alternative C, the fuel treatments would be established by applying the following prescriptions as first entry treatments:

- 1,315 acres of mechanical area thinning of trees less than 30 inches dbh , retaining 40 percent forest canopy cover on south and west facing slopes, and 50 percent on north and east facing slopes, utilizing ground-based and skyline logging systems; allowing for scattered 1/2 acre forest openings. Trees greater than 10.0 inches dbh would be removed as sawlogs (table 2-2)

- 1,026 acres of hand thin, pile, and pile burn trees less than 10.0 inches dbh;

- 334 acres of masticating brush and trees less than 10 inches dbh to 18–25 foot spacing and retain all hardwoods except where removal is required for operability;
- 91 acres of hand thin, grapple pile, and burn;
- 3.5 miles of NFS road reconstruction, 2.8 miles of temporary road construction and 21 new landings); and,
- 1,989 acres low to moderate intensity prescribed underburn, including 331 acres low intensity only in the Valley Creek Special Interest Area (SIA).

Second entry treatments would include:

- 340 acres of follow-up hand thin, pile, and burn;
- 2,269 acres of follow-up underburning.

Third entry treatments would include:

- 176 acres of follow-up hand thin, pile, and burn;
- 291 acres of follow-up underburning.

Table 2-2. Alternative C: Fuel Treatments Area Thinning.

Rx	Diameter Limit	Canopy Cover	Non-RHCA
Area Thin	*(1)* **30 inches**	*(2)* **40 percent**	**(3) 969 acres**
Area Thin	*(4)* **30 inches**	*(5)* **50 percent**	**(6) 346 acres**
	(7)	*(8)* **Total**	**(9) 1,315 acres**

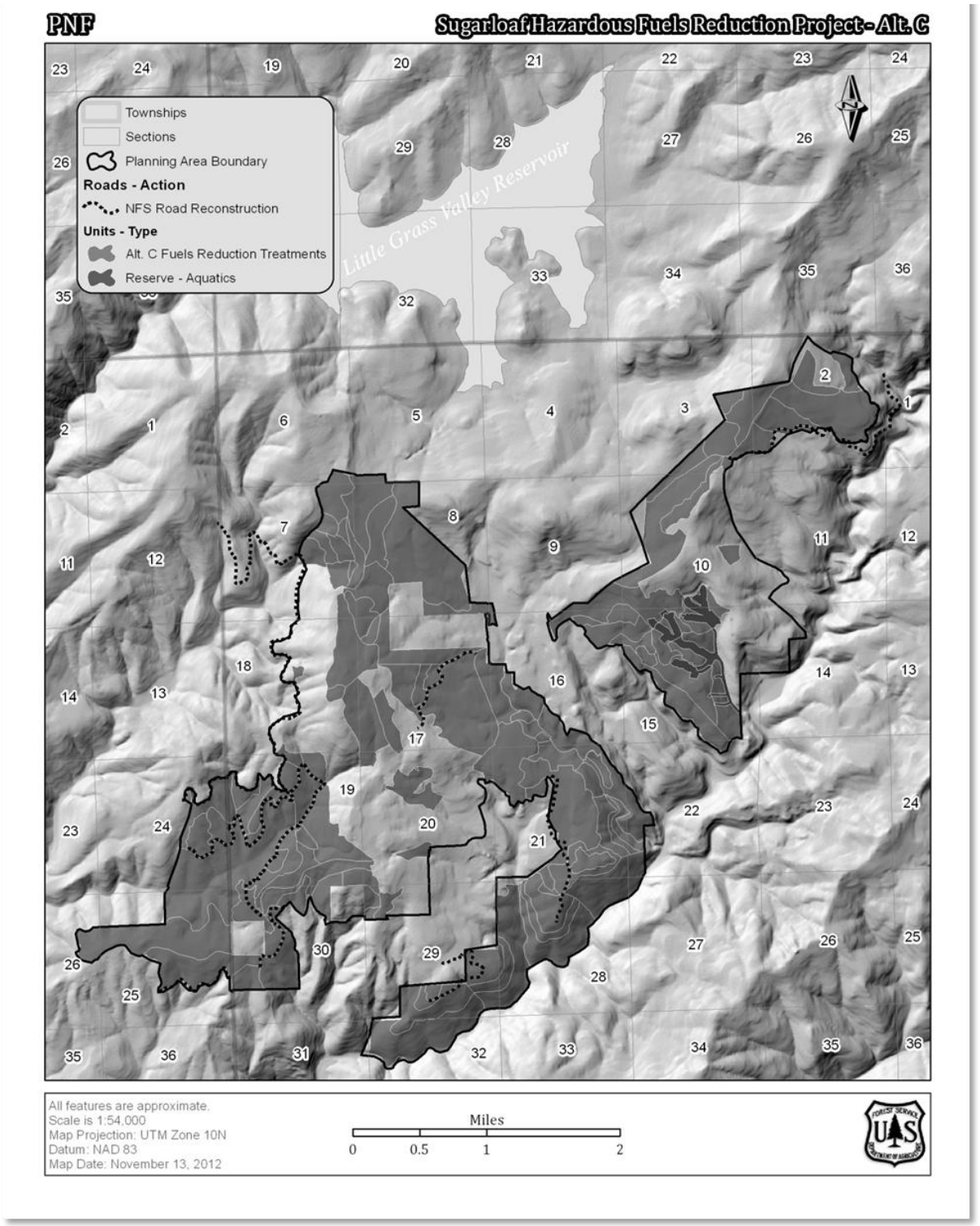

Figure 2-7. Alternative C – Proposed Treatments on NFS lands.

2.2 Design Criteria Common to All Action Alternatives

This section presents a series of tables (tables 2-3 through 2-11) that contain the design criteria for the treatments proposed in the action alternatives. The design criteria are part of the project design, apply to the proposed treatments, and were developed to reduce or avoid adverse environmental effects of the proposed treatments.

Table 2-3. Design Criteria applicable to variable density thinning and area thinning treatments.

Criterion	Actions
Ground-based Harvesting and Yarding	**Mechanical harvesting and whole-tree yarding would be used to remove commercial sawlog and biomass trees. Trees greater than or equal to 10.0 inches dbh would be removed as sawlog product and trees less than 10.0 inches dbh would be removed as biomass product. Tops and limbs would be yarded to the landing and removed as a product.** **Ground-based equipment would be restricted to slopes less than 35 percent. Exceptions may be made for short pitches (less than 100') within the interior of units where slopes exceed these limits. When units have inaccessibly steep inclusions of steeper ground and sawlog products may be end-lined.** **Modify thinning when unit is within 100 feet of LaPorte Rd., private homes and the town of LaPorte. Restrict landing locations and temporary roads so that they will be unseen or undetectable by placing at least 100 feet off roadways, constructing parallel to the main roadway, by placement uphill or downhill from line of sight and maintaining vegetation within the 100 foot buffer. Obliterate landings and temporary roads by restoring to natural condition. Locate skid trails parallel to the roadway and at least 100 feet from the main road** **Mitigate slash by piling and burning; minimize rutting, hummocks and soil surface disturbances by minimizing equipment movement, turns and other actions. Restore surfaces to natural condition where ruts and hummocks have been created.**
Skyline Harvesting and Yarding	**Whole-tree yarding would be used to remove commercial sawlog and biomass trees. Trees greater than or equal to 10.0 inches dbh would be removed as a sawlog product. Tops and limbs may be yarded to the landing or handpiled and burned.** **Skyline yarding would require one end suspension with full suspension over intermittent and perennial streams. The corridor would not be wider than 20 feet. The width for lateral yarding to the skyline corridor would be 75 feet on either side of the mainline. Lateral yarding would not require lift. When there are short inclusions of side hill within the corridor, allow side hill yarding.** **The top 100 feet of the skyline corridor would be rehabilitated with weed-free straw mulch and native seed, following recontouring and restoration of surface disturbance.**
Log Decks	**All decks shall be located at least 300 feet off LaPorte Rd., away from private homes and the town of LaPorte. Cull white-fir and pine trees shall be left in the woods. Oak and incense cedar are to be yarded to a deck; preferrably sold as firewood. All landings and the last 200 feet of main skids leading to the landings would be seeded with three species of native grasses post-treatment including Blue Wild Rye (*Elymus elaucus*), California Brome (*Bromus carinatus*) and Orcutt's Brome (*Bromus orcuttianus*) to increase effective soil cover while minimizing the potential for erosion.**

Table 2-3. Design Criteria applicable to variable density thinning and area thinning treatments (continued).

Criterion	Actions
Residual species preference	**Retain the largest, most vigorous dominant and codominant trees to create a residual stand that would be comprised of larger fire-resilient trees. Species preference would be determined by forest type. In general, prefer to retain shade-intolerant species including rust-resistant sugar pine, black oak, ponderosa and Jefferey pine, and large Douglas-fir.** **Retain largest, specimen tree species within 100 feet of LaPorte Road, private homes, and town of LaPorte. Mark only take trees, and put the mark on the unseen side of the tree.**
Residual surface fuels	**Maintain adequate cover of surface fuels, litter, duff, and large woody debris to maintain habitat values, reduce potential erosion, and meet soil standards for woody debris and ground cover.** **Retain surface fuels (less than 3 inches diameter) at a level that would result in projected flame lengths of less than 4 feet under 90th percentile weather conditions. This generally corresponds to approximately 5 tons or less of surface fuels per acre, or a fuel model TL1 or TL3, depending on the forest type. Fuel model TL1 and TL3 are representative of the desired condition for surface fuels for fir dominated and pine dominated stands, respectively.** **Retain large woody debris (greater than 12 inches diameter), where they exist, at 10 to 15 tons per acre of the largest down logs. Where needed, jackpot burn, or machine pile and burn extensive areas of deadfall, where feasible, in terms of equipment operability and reduced chance of excessive scorch-related mortality upon burning of these piles.** **Based on post treatment evaluations, underburn, jackpot burn, machine pile and burn, and/or hand pile and burn to treat natural and activity-generated fuels.**
Snag retention	**Retain the number of snags per acre appropriate for each forest type unless removal is required to allow for operability. In Sierra mixed conifer types and ponderosa pine forest types, retain four to six of the largest snags per acre.. Snags larger than 15 inches dbh and 20 feet in height would be used to meet this guideline.**
Fireline	**Construct firelines using hand crews or mechanical equipment, as needed, around areas to be underburned, and around machine piles or hand piles. Incorporate existing roads, landings, skid trails, rock fields, bare areas, and other features into containment lines where logical and feasible.**
Treatment of Stumps	**All stumps 14 inches and greater in diameter would be treated with borax within one day of cutting, to prevent the introduction and spread of *Heterobasidion* root disease for select units.** **Cut stumps along LaPorte Rd., private property and the town of LaPorte no taller than 8 inches above the surface and cut stumps at a slope facing away from the line of sight.**

Table 2-4. Design Criteria for Group Selections – Alternative B only.

Criterion	Actions
Group Selection size	**0.5 acre to 2.0 acres; irregular shape.**
Group Selection location	**Group selections would primarily be located in CWHR size class 4 stands (average dbh of 11 to 24 inches); target locations where insect, disease, simplified tree species composition and/or declining tree vigor is evident. Locate outside Riparian Habitat Conservation Areas and Riparian Conservation Areas.** **Locate group selection units at least 300 feet away from the LaPorte Rd., private homes and the town of LaPorte while maintaining a vegetative buffer between visually evident operations and the sensitive viewshed; unique to topographic position, slope gradient and proximity to public infrastrucutres and main access routes.**
Ground-based Harvesting and Yarding	**Mechanical harvesting and whole-tree yarding would be used to remove commercial sawlog and biomass trees. Trees greater than or equal to 10 inches dbh would be removed as sawlog product and trees less than 10 inches dbh would be removed as biomass product. Tops and limbs would be yarded to the landing and removed as a product.** **Ground-based equipment would be restricted to slopes less than 35 percent. Exceptions may be made for short pitches (less than 100') within the interior of units where slopes exceed these limits. When units have inaccessibly steep inclusions of steeper ground, sawlog and biomass products may be end-lined.** **Restrict landing locations and temporary roads so that they will be unseen or undetectable by placing at least 100 feet off roadways, constructing parallel to the main roadway, by placement uphill or downhill from line of sight and maintaining vegetation within the 100 foot buffer. Obliterate landings and temporary roads by restoring to natural condition.** **Locate skid trails parallel to the roadway and at least 100 feet from the main road.** **Mitigate slash by piling and burning; minimize rutting, hummocks and soil surface disturbances by minimizing equipment movement, turns and other actions. Restore surfaces to natural condition where ruts and hummocks have been created.**
Skyline Harvesting and Yarding	**Whole-tree yarding would be used to remove commercial sawlog trees greater than or equal to 10 inches dbh. Tops and limbs may be yarded to the landing or handpiled and pile burned.** **Skyline yarding would require one end suspension with full suspension over intermittent and perennial streams. The corridor would not be wider than 20 feet. The width for lateral yarding to the skyline corridor would be 75 feet on either side of the mainline. Lateral yarding would not require lift. Side-hill setups would not be allowed.** **The top 100 feet of the skyline corridor would be rehabilitated with weed-free straw mulch and native seed, following recontouring and restoration of surface disturbance.**
Diameter constraints	**All trees greater than or equal to 30 inches dbh would be retained, except where removal is required to allow for operability. Minimize damage to trees greater than or equal to 30 inches dbh as much as practicable.**
Log Decks	**All decks shall be located at least 300 feet off LaPorte Rd., away from private homes and the town of LaPorte. Cull trees shall be left in the wood and are not to be yarded to a deck. All landings and the last 200 feet of main skids leading to the landings would be seeded with three species of native grasses post-treatment including Blue Wild Rye (*Elymus elaucus*), California Brome (*Bromus carinatus*) and Orcutt's Brome (*Bromus orcuttianus*) to increase effective soil cover while minimizing the potential for erosion.**

Table 2-4. Design Criteria for Group Selections – Alternative B only (continued).

Criterion	Actions
Slash treatment / Site Preparation	**Based on post treatment evaluations, underburn, jackpot burn, machine pile and burn, and/or hand pile and burn, to treat natural and activity generated fuels, and shrubs.**
Regeneration strategy	**Regenerate groups with native shade-intolerant conifers, indicative of the ecological habitat type in which the group is located, using a combination of natural and planted seedlings to achieve desired stocking levels. Plantation performance would be monitored after the 1st and 3rd years, and regeneration actions would be undertaken, if needed, to ensure successful regeneration within five years after harvest. Control competing brush and grass by grubbing or mastication, if necessary, to assure survival and growth of conifers.**
Residual species preference	**Retain all sugar pine tagged as resistant to white pine blister rust. Where black oak is present, retain black oaks greater than or equal to 3 inches dbh.**
Residual surface fuels	**Maintain adequate cover of surface fuels, litter, duff, and large woody debris to maintain habitat values, reduce potential erosion, and meet soil standards for woody debris and ground cover.** **Retain surface fuels (less than 12 inches diameter) at a level that would result in projected flame lengths of less than 4 feet under 90th percentile weather conditions. This generally corresponds to approximately 5 tons or less of surface fuels per acre, or a fuel model 8 or 9, depending on the forest type. Fuel model TL1 and TL3 are representative of the desired condition for surface fuels for fir dominated and pine dominated stands, respectively.** **Retain Large Woody debris (greater than 12 inches diameter): Where they exist, retain 10 to 15 tons per acre of the largest down logs. Where needed, machine pile and burn extensive areas of deadfall, where feasible, in terms of equipment operability and reduced chance of excessive scorch-related mortality upon burning of these piles.**
Snag retention	**Retain two of the largest snags per acre exceeding 15 inches dbh and 20 feet tall, unless removal is required to allow for operability.**
Fireline	**Construct firelines using hand crews or mechanical equipment around groups to be underburned and around machine piles or hand piles, as needed. Incorporate existing roads, landings, skid trails, rock fields, bare areas, and other features into containment lines where logical and feasible.**
Treatment of Stumps	**All stumps 14 inches and greater in diameter would be treated with borax within a day of cutting, to prevent the introduction and spread of *Heterobasidion* root disease for select units.** **Cut stumps no taller than 8 inches and slope the cuts away from the line of sight when viewing from roads, private homes or the town of LaPorte.**

Table 2-5. Design Criteria for RHCAs and RCAs.

Criterion	Actions
RHCA and RCA Equipment constraints	Riparian Habitat Conservation Areas (RHCAs): Overall widths, per SAT guidelines, are 150 feet for non-fish bearing and 300 feet for fish bearing on each side of stream. The following buffers by treatments apply to RHCAs, unless otherwise specified below. All buffers are no-treatment buffers, unless specified otherwise. Buffers smaller than RHCAs are prescribed for treatments on slopes less than or equal to 35%. These buffers are doubled for slopes greater than 35% and where special aquatics concerns exist. Riparian Conservation Areas (RCAs): Overall widths, per the 2004 SNFPA FSEIS, are 300 feet for perennial and 150 feet for seasonally flowing streams for all alternatives. Groups Selection, Mechanical Thinning and Area Thinning: Maintain standard RHCAs. These treatments by mechanical equipment would not occur within the full width of RHCAs. Only applies to alternative B. Mechanical Thinning and Radial Thinning: Can treat up to 150 feet for non-fish bearing and 300 feet for fish bearing on each side of stream. Only applies to alternatives C and D. Treatment will occur within RCA land allocation. Mastication: Apply a 25 foot buffer for SMZs, a 50 foot buffer for all non-fish bearing streams and a 75 foot buffer for fish bearing streams. Applies to all the action alternatives. Handcut/Pile/Burn (HCPB): No buffer on all ephemeral streams, but retain at least 50% canopy cover and all riparian vegetation post treatment. Piles should be at least 25 feet from edge of stream. Apply a 25 feet buffer to all other non-fish bearing streams and a 50 foot buffer to fish bearing streams. Locate burn piles away from riparian vegetation to reduce the potential for scorch where feasible. Applies to all the action alternatives. Handcut/Grapple Pile (HCGP): 50 feet buffer for ephemeral streams, 75 feet for all other non-fish bearing and 100 feet for fish bearing streams. Applies to all the action alternatives. Underburns (UB): Ignite prescribed fire outside Backing fires would be used to minimize scorch of riparian vegetation within these buffers. Active ignition for prescriptive underburning should be minimized within 50 feet of perennial channels and 25 feet of ephemeral and intermittent channels. Applies to all the action alternatives. Applies to all the action alternatives.
Diameter constraints	Within mechanical harvest areas, implement a 20-inch upper diameter limit, except where needed for operability. Minimize damage to trees larger than 20 inches dbh as much as practicable. In equipment exclusion zones, implement an 9-inch upper diameter limit on hand thinning treatments.
Residual species preference	Where present, retain all hardwood and riparian species. Retain the largest, most vigorous dominant and codominant trees to create a residual stand that would be comprised of larger fire-resilient trees.Species preference would be determined by forest type. In general, prefer to retain shade-intolerant species including rust-resistant sugar pine, black oak, ponderosa and Jefferey pine, and large Douglas-fir.
Snag retention	Retain the number of snags per acre appropriate for each forest type unless removal is required to allow for operability. In Sierra mixed conifer types and ponderosa pine forest types, retain four of the largest snags per acre. In the red fir forest type, retain 6 of the largest snags per acre. Snags larger than 15 inches dbh and 20 feet in height would be used to meet this guideline.

Table 2-5. Design Criteria for RHCAs and RCAs (continued).

Criterion	Actions
Fireline	**Construct firelines using hand crews around areas to be underburned or pile burned, as needed, Incorporate existing roads, landings, skid trails, rock fields, bare areas, and other features into containment lines where logical and feasible.**
Residual surface fuels	**Maintain adequate cover of surface fuels, litter, duff, and large woody debris to maintain habitat values, reduce potential erosion, and meet soil standards for woody debris and ground cover.** **Retain surface fuels (less than 12 inches diameter) at a level that would result in projected flame lengths of less than 4 feet under 90th percentile weather conditions. This generally corresponds to approximately 5 tons or less of surface fuels per acre, or a fuel model 8 or 9, depending on the forest type. Fuel model 8 and 9 are representative of the desired condition for surface fuels for fir dominated and pine dominated stands, respectively.** **Retain Large Woody debris (greater than 12 inches diameter): Where they exist, retain 10 to 15 tons per acre of the largest down logs. Where needed, machine pile and burn extensive areas of deadfall, where feasible, in terms of equipment operability and reduced chance of excessive scorch-related mortality upon burning of these piles.**

Table 2-6. Design Criteria for Effective Soil Cover for All Treatment Types if Cover is Not Met.

Erosion Hazard Rating (EHR)	Percent Effective Soil Cover	Design Feature
Low-Moderate	**50%**	**Units that do not meet effective soil cover post-treatment would have to spread weed-free straw on bare soil areas until the project standard for effective soil cover is met. Concentrate spreading weed-free straw on bare areas larger than 25 square feet first. The minimum thickness will have to be 0.5 inches to count as effective soil cover.**
High	**60%**	

Table 2-7. Design Criteria for Access and Transportation.

Criterion	Actions
NFS roads	Decomission and obliterate approximately 0.6 mile of NFS road 28N38A upon project completion. Return to native contour and condition
Non-system roads	Construct approximately 4.3 miles of new temporary (non-system) roads followed by decommissioning (obliteration) post implemention, including restoring the soil surface to natural grade.
Harvest landings	Landings would be utilized to remove sawlog and biomass products. The Sugarloaf Project is planned to accommodate product removal with one landing per 40 acres. Per FSH 2409.15, a project should have no more than one landing per 20 acres except when there is a need for more landings to limit resource protection problems. Existing landings shall be reconstructed and utilized considering the location and effects to resources. Would construct new landings where existing landings are not present or are inadequate due to the location and effects to resources. Number and location of landings would be subject to agreement and would conform to direction as specified in FSH 2409.15, SMRs and BMPs. For existing landings supporting cull decks, identify and relocate individual hollow log structures prior to cull deck construction. Relocate hollow logs to forest stand outside of landing disturbance area. Landing spacing for skyline units would be 150 feet. Skyline units may require more landings in order to facilitate operations. Removal of green trees would occur to allow for temporary non-system road and landing construction. All landings and the last 200 feet of main skids leading to the landings will be reseeded with three species of native grasses post-treatment. The species of native grasses that will be used are Blue Wild Rye (*Elymus elaucus*), California Brome (*Bromus carinatus*) and Orcutt's Brome (*Bromus orcuttianus*).

NOTE:

a. Road treatments are planned and would be implemented in accordance with the PNF LRMP (USDA 1988) and the Plumas National Forest Public Motorized Travel Management FEIS (USDA 2010a) and ROD (USDA 2010b).

Table 2-8. Design Criteria for Watershed Improvements.

Criterion	Actions
NFS road improvement	Treatments range from light brushing with no drainage improvements to heavy brushing and large drainage improvements. Drainage improvements may include: outsloping road segments, installing armored rolling dips, or replacing culverts. Four priority roads within the project area (PC511A, 22N53, 21N18A, and 21N42Y), with a combined length of about 4.9 miles, are proposed to be reconstructed and improved with additional cross-drains to address current water quality concerns.
NFS road decommissioning	Decomission approximately 0.7 miles of NFS road. Approximately less than 0.3 miles of road at the end of 22N53, and the entire road lenghts of 21N18G and 21N62Y.
Non-system road Obliteration	Obliterate approximately 9.8 miles of non-system roads.

Note:

a. Road treatments are planned and would be implemented in accordance with the PNF LRMP (USDA 1988) and the Plumas National Forest Public Motorized Travel Management FEIS (USDA 2010a) and ROD (USDA 2010b). Watershed improvements are not proposed under alternative C (non-commercial funding alternative).

Table 2-9. Design Criteria for Minerals Resources.

Project Design Features and Constraints for Projects Planned in Areas Where Mining Claims Exist
Protect mining claim corner markers and discovery markers. (This does not apply to signs attached to trees.) Monuments are usually a wooden 4 × 4 post or a PVC pipe, often with rocks piled up around the base. However, a wide variety of variations can be found.
Claim signs attached to trees (marked for removal) should be removed from the tree and turned in to the Minerals staff, so the signs may be returned to the claimant. The location of the sign should be noted when turning it in to the Minerals staff.
Plan ground based project activities so as not to interfere with active mining operations.
The time between document input and project implementation may be a few months or a few years. Because mining claims can be dropped or new claims filed at any time, a letter to new claimants may be required to allow coordination of the timing of activities.

2.2.1 Comparison of Alternatives

The comparison of alternatives focuses on objectives and issues that provided measureable elements to the proposed action and emphasized the most important environmental effects. These are elements of the ecosystem that can be measured to indicate an increase or decrease in trends in ecological health. To compare these elements, measurement indicators were developed to show the differences between the alternatives and provide a clear basis for the decision to be made by the Responsible Official. The measurement indicators are used in the analysis to quantify and describe how well the proposed action and alternatives meet the project objectives. Figure 2-8 displays acres of treatment for each alternative. Table 2-10 shows the difference between all alternatives by using measurement indicators, organized by elements of the purpose and need.

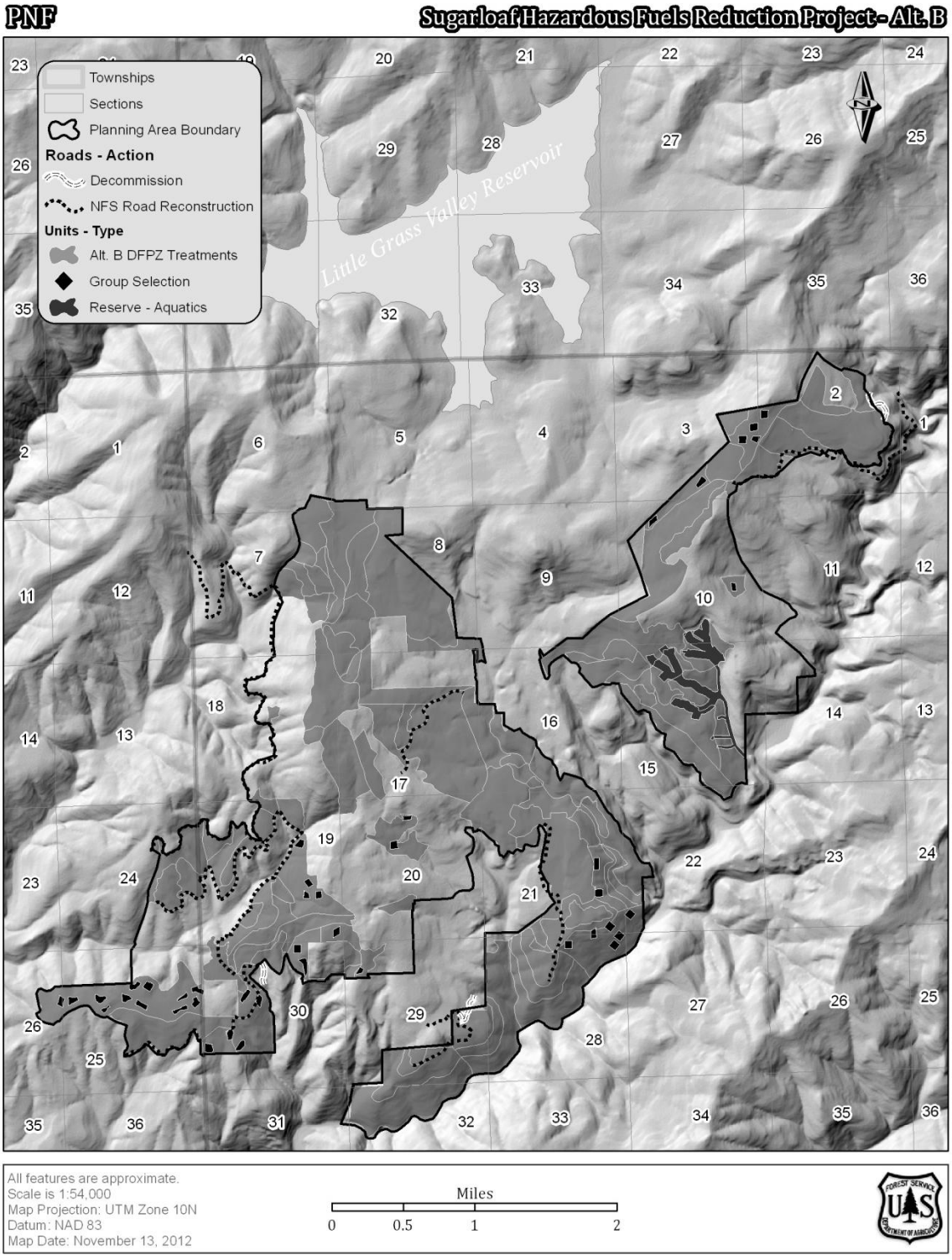

Figure 2-8. Alternative B - Proposed Treatments on NFS lands.

Table 2-10. Comparison of Alternatives Considered in Detail – Proposed Treatment Methods.

Alternative A	Alternative B	Alternative C	Alternative D (Proposed Action)
No Proposed Activities The No-action Alternative provides a baseline against which to compare the other alternatives.	Alternative B is designed to be consistent with the HFQLG Act standards and guidelines; assumes legislative extension prior to decision. Wood by-products from these treatments are expected to produce 5.8 million board feet of commercially-valuable timber volume • 992 acres of DFPZ thinning with 763 acres of variable density thinning and 229 acres of area thinning (83 acres skyline logging) • 71 acres of group selection (GS). Timber harvest operations require 4.9 miles of NFS classified road reconstruction, 4.3 miles of unclassified (temporary) road construction (closed post operations) and the construction of • 31 new log landing sites • 223 acres of mastication • 683 acres of hand thin, pile, and burn • 3,919 acres of prescribed fire using manual ignition (i.e., drip torch) techniques • 20.3 miles of NFS road would be improved, decomissioned or obliterated to promote watershed health.	Alternative C is designed to fulfill 2004 SNFPA ROD and FEIS land management direction standards and guidelines: Wood by-products from these treatments are expected to produce 5.3 million board feet of commercially-valuable timber volume (20 acres of skyline logging); • 1,315 acres of fuel treatments using area thinning. Timber harvest operations require 3.5 miles of NFS classified road reconstruction, 2.8 miles of unclassified road construction (closed post operations) and the construction of 21 new landing sites. • 334 acres of mastication • 1,542 acres of hand thin, pile, and burn • 91 acres of hand thin, grapple pile, and burn • 3,643 acres of prescribed fire, including 331 acres within the federally-administered Valley Creek Special Interest Area (SIA).	Alternative D is designed to fulfill 2004 SNFPA ROD and FEIS land management direction standards and guidelines: Wood by-products from these treatments are expected to produce 4.6 million board feet of commercially-valuable timber volume • 859 acres of variable density thinning and 76 acres of area thinning (no skyline logging) Timber harvest operations require 3.6 miles of NFS classified road reconstruction, 2 miles of unclassified road construction (closed post operations) and the construction of 24 new landing sites. • 278 acres of mastication • 278 acres of mastication • 1,401 acres of hand thin, pile, and burn • 71 acres of hand thin, grapple pile, and burn • 3,598 acres of prescribed fire, including 331 acres within the federally-administered Valley Creek Special Interest Area (SIA) • 16.9 miles of NFS road would be improved, decommissioned or obliterated.

Table 2-11. Comparison of Alternatives Considered in Detail - Purpose and Need.

Purpose	Need	Measurement Indicators	Alternative A (No-Action)	Alternative B (HFQLG Act)	Alternative C (2004 SNFPA: Fuels Reduction Only)	Preferred Alternative D (2004 SNFPA) Proposed Action
1. Achieve desired fire behavior to reduce wildfire risk to natural resources on National Forest System (NFS) land(s) and the at-risk communities of LaPorte and American House.	1. Reduce hazardous fuel accumulations.	Flame length (ft)	1–100 ft	1–4 ft within treatment units 1–41 ft average within Project Area (13 percent not treated)	1–4 ft within treatment units 1–50 ft average within Project Area (26 percent not treated)	1–4 ft within treatment units 1–41 ft average within Project Area (11 percent not treated)
		Canopy base height (ft)	1–68 ft	1–83 ft	1–83 ft	1–83 ft
		Fire type	Surface/ Passive/Active	Primarily Surface/Passive	Primarily Surface/Passive	Primarily Surface/Passive
2. Modify tree crown densities, tree species composition and forest structures to develop a mosaic of full-sun and interior filtered-light, healthy forestland conditions, resilient to climate change and disturbances.	2. Establish disturbance resilient late seral forestland conditions (i.e., California Wildlife Habitat Relationship [CWHR] size classes 4M/4D and 5M/5D), capable of supporting 50 to 70 percent healthy canopy cover in California spotted owl home range core areas (CSO HRCAs).	Compostional structure (post treatment trees per/acre[tpa])	249 tpa (50–1101)	83 tpa (4–349)	129 tpa (34–408)	129 tpa (34–408)
		Average basal area in square ft/acre (post treatment)	309 ft^2/ac (1-422)	195 ft^2/ac (1-420)	231 ft^2/ac (1-420)	248 ft^2/ac (1-420)
		Forest structure (Relative stand density in percent)	68 percent (1–99)	37 percent (1–86)	47 percent (1–86)	50 percent (1–86)
		Post-Treatment Retention - Trees >24 in. dbh (percent)	100 percent	76 percent (18–100)	87 percent (51–100)	94 percent (51–100)

Table 2-11. Comparison of Alternatives Considered in Detail - Purpose and Need (continued).

Purpose	Need	Measurement Indicators	Alternative A (No-Action)	Alternative B (HFQLG Act)	Alternative C (2004 SNFPA: Fuels Reduction Only)	Preferred Alternative D (2004 SNFPA) Proposed Action
3. Improve watershed health.	3. Reduce the number of improperly constructed and misaligned NFS roads	Road - New Construction	0 miles	0 miles	0 miles	0 miles
		Road - Reconstruct	0 miles	4.9 miles	3.5 miles	3.6 miles
		Temporary Roads - New	0 miles	4.3 miles	2.8 miles	2.0 miles
		Temporary Roads - Reconstruct	0 miles	4.9 miles	3.2 miles	2.8 miles
		Road Decommissioning & Obliteration	0 miles	10.5 miles	0 miles	10.5 miles
4. Afford a broad spectrum of wood by-products and job opportunities to contribute to the economic stability of rural communities.	4. Provide employment opportunities for rural communities dependent upon forest products for jobs and revenue.	Revenue/Costs				
		Sawlog Harvest Volume (MMBF)	0	5.8 MMBF	5.3 MMBF	4.6 MMBF
		Sawlog and biomass harvest revenues	0	$963,799 (Biomass optional)	$672,061	$585,515 (no biomass)
		Harvest costs	0	$1,175,035	$1,140,939	$307,872
		Net harvest revenues	0	-$211,236	-$468,879	$277,643
		Non-harvest costs (Fuels Treatments)	0	$1,457,150	$2,402,200	$2,259,350
		Total project value	0	-$1,668,386	-$2,871,078	-$1,981,707
		Employment/Income				
		Potential Direct and Indirect Jobs	0	152	186	147
		Potential Employee Income	0	$6,529,009	$7,978,070	$6,322,505

2.2.2 Comparison of Alternatives – Significant and Other Relevant Issues

For the purpose of this DEIS analysis, tables 2-12 to 2-16 display alternative determination of effects to the social, physical and biological affected environment, based on current data, best available science and Geographic Information Systems analysis tools. The Forest Service identified cumulative effects to watershed resources as a significant issue, as proposed ground-disturbing activities (e.g., logging, prescribed burning, etc.) in watersheds already considered highly disturbed by land management may adversely affect beneficial uses of water related resources, including aquatic dependent resources. Other relevant issues classified for this DEIS analysis, differ from significant issues, in that they are either addressed by project design or they represent minor and/or non-variable consequences typically partially or fully mitigated by standard operating procedures (typically applied as contractual provisions). For further disclosure of resource effects, refer to the supporting resource reports to this DEIS, available upon request.

Table 2-12. Summary of effects to watershed and aquatic wildlife resources by alternative.

Measurement Indicators	Alternatives Considered in Detail			
	Alternative A (No-Action)	Alternative B (Preferred HFQLG Act)	Alternative C (Fuels Reduction Only)	Alternative D (2004 SNFPA)
Potential Direct, Indirect and Cumulative Effects to Sierra Mountain yellow-legged frog	Will not affect	Will not affect	Will not affect	Will not affect
Potential Direct, Indirect and Cumulative Effects to Pacific pond turtle	Will not affect	May Affect Individual, but is not likely to result in trend toward Federal listing of viability	May Affect Individual, but is not likely to result in trend toward Federal listing of viability	May Affect Individual, but is not likely to result in trend toward Federal listing of viability
Potential Direct, Indirect and Cumulative Effects to Foothill yellow-legged frog	Will not affect	May Affect Individual, but is not likely to result in trend toward Federal listing of viability	May Affect Individual, but is not likely to result in trend toward Federal listing of viability	May Affect Individual, but is not likely to result in trend toward Federal listing of viability
Potential Cumulative Effects to Water Quality: Change in Threshold of Concern (TOC)	No Change. The percent of TOC for the subwatersheds range from 24 to 136 with subwatershed 15 being over threshold at 136%, subwatershed 5 approaching threshold at 95%, and subwatershed 11 at 97% of TOC. The ERA totals for all remaining subwatersheds are below the TOC.	Alternative B would result in subwatersheds 5, 6, and 8 to be over the TOC. Post treatment effects in subwatershed 15 would increase percent toward TOC. Subwatershed 11 would reach TOC.	Alternative C reveals similar effects when compared to Alternative B. All sixteen subwatersheds would result in an increase in their TOC percentage, with the same three subwatersheds (5, 6, and 8) predicted to be over TOC. Subwatershed 15 that is already over TOC is predict to have an increase in percent TOC.	Alternative D would result in subwatersheds 5, 6, and 8 to be over the TOC. Post treatment effects in subwatershed 15 would increase percent toward TOC. Subwatershed 11 would reach TOC.

Table 2-12. Summary of effects to watershed and aquatic wildlife resources by alternative (continued).

Measurement Indicators	Alternatives Considered in Detail			
	Alternative A (No-Action)	Alternative B (Preferred HFQLG Act)	Alternative C (Fuels Reduction Only)	Alternative D (2004 SNFPA)
			Since the road obliterations proposed under alternative B would not occur, fewer localized improvements in water quality would be realized.	
Potential Direct and Indirect Effects to Water Quality: Road density (miles per square mile)	3.22–9.59 miles per sq mile	4.7% decrease in road density	No decrease in road density 3.22–9.59 miles per sq mile	4.7% decrease in road density
Potential Direct and Indirect Effects to Water Qualtiy: Best Management Practices Evaluation Program (BMPEP).	Not applicable	In most cases, BMP evaluations rate a "fail" when sediment is introduced into a stream channel adjacent to a project activity. While correction of all legacy factors is currently not feasible due to temporal and fiscal constraints, proposed decommissioning, obliteration, reconstruction and maintenance of roads under alternative B would correct the worst of the observed legacy factors contributing to water quality impacts.	Reductions of sedimentation would be foregone , as road decommissioning and obliteration is not proposed under alternative C.	In most cases, BMP evaluations rate a "fail" when sediment is introduced into a stream channel adjacent to a project activity. While correction of all legacy factors is currently not feasible due to temporal and fiscal constraints, proposed decommissioning, obliteration, reconstruction and maintenance of roads under alternative D would correct the worst of the observed legacy factors contributing to water quality impacts.

Table 2-13. Summary of effects to wildlife resources by alternative.

Terrestrial Wildlife Species	No Action Alternative A	Action Alternatives B, C, and D
Northern goshawk (*Accipiter gentilis*)	Will not affect	May affect individual, but is not likely to result in trend toward Federal listing of viability
California spotted owl (*Strix occidentalis occidentalis*)	Will not affect	May affect individual, but is not likely to result in trend toward Federal listing of viability
American marten (*Martes americana*)	Will not affect	May affect individual, but is not likely to result in trend toward Federal listing of viability
Pacific fisher (*Martes pennanti pacifica*)	Will not affect	May affect individual, but is not likely to result in trend toward Federal listing of viability
Pallid bat (*Antrozous pallidus*)	Will not affect	May affect individual, but is not likely to result in trend toward Federal listing of viability
Townsend's big-eared bat (*Corynorhinus townsendii*)	Will not affect	May affect individual, but is not likely to result in trend toward Federal listing of viability

Table 2-14. Summary of effects to wildlife resources by alternative.

Old-forest Dependent Species and Habitats	Alternative A	Alternative B	Alternative C	Alternative D
Suitable Nesting and Roosting Habitats (CWHR size classes 4M4D/5M5D)	No immediate change in wildlife habitat conditions Habitat conditions would continue to progress in response to natural ecological succession. There is uncertainty as to the risk and percentage of reduced habitat that would occur from a wildfire if treatments did not occur.	Moderate risk reduction of potential habitat loss due to wildfire. Reduces 25% of stands suitable to old-forest dependent species to an unsuitable condition (open forest canopy or early seral): • Group Selection 80 acres 4M/4D/5M • Mechanical Thinning 933 acres reduces 19% of 4M and 4D size class trees (4M 236 acres 40% canopy cover and 4D 697 acres 40% canopy cover) • Hand-cut-burn/Mastication/ Underburn 2,031 acres reduces 42% of the understory in these in size class 5M, 4M and 4D (5M 275 acres, and 4M/4D 1,756 acres) • Landings 48 acres in 4M/4D.	Moderate risk reduction of potential habitat loss due to wildfire. Reduces 5% of CWHR size-density class 4M stands suitable to old-forest dependent species to an unsuitable condition (open forest canopy): • Group Selection 0 acres • Mechanical Thinning 879 acres reduces 18% of 5M and 4D size class trees (5M 110 acres 50% canopy cover 4M 23 acres 50 % canopy cover 4M 186 acres 40% canopy cover 4D 235 50% canopy cover and 4D 325 40% canopy cover) • Hand-cut-burn/Mastication/ Underburn 1,998 aces reduces 42% of the understory in these in size class 5M, 4M and 4D (5M 180 acres and 4M/4D 1,818 acres). • Landings 21 acres in 4M/4D.	Moderate risk reduction of potential habitat loss due to wildfire. Since alternative D does not include Group Selection, has the least amount of mechanical thinning acres; whereby treatments are specifically designed to retain all suitable habitats for old-forest dependent species (i.e., no open forest canopy or early seral conditions created), it has least potential to impact Forest Service sensitive species compared alternatives B and C: • Group Selection 0 acres • Mechanical Thinning 741 acres reduces 15% of size class trees 4M and 4D (4M 203 40% canopy cover 4D 359 50% canopy cover and 4D 179 acres 40% canopy cover) • Hand-cut-burn/ Mastication/Underburn • 2,432 acres reduces 51% of the understory in these in size class 5M, 4M and 4D (5M 327 and 4M/4D 2,105 acres) • Landings 17 acres in 4M/4D.

Table 2-15. Summary of effects to physical and biological resources by alternative.

NFS Land Resources	Alternative A	Alternative B	Alternative C	Alternative D
Air Quality - Emissions				
Predicted Emissions of Wildfire Compared to Action Alternatives (compares predicted emissions of a wildfire the size of the areas treated)	2,979 tons in the event of a wildfire	951.26 tons	1,093.74 tons	1,122.24 tons
Productivity for Plant Growth and Soil Hydrologic Function				
Change to Effective Soil Cover	N/A	All proposed treatment units are expected to meet the project standard for effective soil cover due to overall high percentage of effective soil cover, LOPs, BMPs, design features and mitigations. Treatment units 002A and 002B would be monitored for effective soil cover post implementation.	Alternative C overall has the greater potential to effect effective soil cover because there are more acres of mechanical treatment that remove effective soil cover when compared to alternatives B and D.All proposed treatment units are expected to meet the project standard for effective soil cover due to overall high percentage of effective soil cover, LOPs, BMPs, design features and mitigations.	All proposed treatment units are expected to meet the project standard for effective soil cover due to overall high percentage of effective soil cover, LOPs, BMPs, design features and mitigations. Treatment units 002A and 002B would be monitored for effective soil cover post implementation.
Percent Detrimental Compaction	N/A	The potential for compaction is similar under alternatives B and D because the net amount of proposed tractor logging (mechanical thinning) is identical.	The potential for compaction is higher under alternative C compared to alternatives B and D because of the net gain of 454 acres of mechanical treatment.	The potential for compaction is similar under alternatives B and D because the net amount of proposed tractor logging (mechanical thinning) is identical.

Table 2-15. Summary of effects to physical and biological resources by alternative (continued).

NFS Land Resources	Alternative A	Alternative B	Alternative C	Alternative D
Fine organic matter	N/A	In Alternative B, 8 (002A, 002B, 046A, 046B, 227B, 573, 902, 904A) would not meet or have the potential of not meeting the desired condition, post implementation.	Under alternative C, three of the surveyed units would not meet the desired condition for fine organic matter. Units 002A, 002B, and 227B would not meet desired condition because they are no treatment units in the aforementioned alternatives.	Similar to alternative C, three of the surveyed units under alternative D,would not meet the desired condition for fine organic matter. Units 002A, 002B, and 227B would not meet desired condition because they are no treatment units in the aforementioned alternatives.
Botanical - Forest Service Sensitive plant species				
Lewisia kelloggii ssp. *hutchisonii*	MAI[a]	MAI	MAI	MAI
Cypripedium fasciculatum	MAI	MAI	MAI	MAI
Peltigera hydrothyria (lichen)	WNA[b]	WNA	WNA	WNA
Lupinus dalesiae	MAI	MAI	MAI	MAI
Phaeocollybia olivacea (fungus)	WNA	MAI	MAI	MAI
Botrychium crenulatum	MAI	MAI	MAI	MAI
Botanical - invasive plant species				
Noxious Weeds	Low potential for weed spread	Slightly increased potential for weed spread proportional to amount of ground disturbed; minimized through avoidance mitigation and prevention measures.	Slightly increased potential for weed spread proportional to amount of ground disturbed; minimized through avoidance mitigation and prevention measures.	Slightly increased potential for weed spread proportional to amount of ground disturbed; minimized through avoidance mitigation and prevention measures.

a. May affect individual, but is not likely to result in trend toward Federal listing of viability.

b. Will not affect.

Table 2-16. Summary of effects to the social environment by alternative.

NFS Land Resources and Amenities	Alternative A	Alternative B	Alternative C	Alternative D
Cultural Resources				
Potential physical damage or loss of sites and features	No effect	No effect	No effect	No effect
Recreation, Visuals and Public Safety				
Effects to recreation users	No change	Short-term conflicts between users during operations would be minor and associated with short term increases in traffic, noise, smoke, and dust from project activities causing minor disruption to recreationists and dispersed camping. Proposed treatments may temporarily restrict access to dispersed hiking, or temporarily affect the visual character of the roads and roadside scenic views. There would be no effect to human safety through avoidance mitigation.	Short-term conflicts between users during operations would be minor and associated with short term increases in traffic, noise, smoke, and dust from project activities causing minor disruption to recreationists and dispersed camping. Proposed treatments may temporarily restrict access to dispersed hiking, or temporarily affect the visual character of the roads and roadside scenic views. There would be no effect to human safety through avoidance mitigation.	Short-term conflicts between users during operations would be minor and associated with short term increases in traffic, noise, smoke, and dust from project activities causing minor disruption to recreationists and dispersed camping. Proposed treatments may temporarily restrict access to dispersed hiking, or temporarily affect the visual character of the roads and roadside scenic views. There would be no effect to human safety through avoidance mitigation.
Effects to Scenic Quality	No direct effects to visual quality. However, the lack of treatments would perpetuate existing dense forest canopy. Long-term potential loss of scenic quality and integrity due to wildfire.	Scenic quality would be improved. Short-term negative effect in variable density thinning, mechanical thinning and mastication units. Long-term scenic integrity effects in group selection units. Long-term benefits to scenic integrity and stability.	Scenic quality would be improved. Short-term negative effect to scenic integrity. Greatest improvements in scenic stability. Long-term improvements to scenic integrity and stability.	Scenic quality would be improved. Short-term negative effect to scenic integrity. Moderate improvement to scenic stability. Long-term improvements to scenic integrity and stability.
Consistency with Travel Management Rule and most recent USFS policies	N/A	Fully consistent	Fully consistent	Fully consistent